

**MINISTRY OF ENERGY, MINES AND PETROLEUM RESOURCES
BRIEFING NOTE FOR DECISION**

I PREPARED FOR: Honourable Michelle Mungall, Minister of Energy, Mines and Petroleum Resources

II ISSUE: *Mineral Tenure Act* Pre-Engagement

III BACKGROUND:

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Mineral tenure is a form of property right to a natural resource. The current mineral tenure regime is premised on a clear and transparent mechanism for projects to move through the development process from claims to an operating mine. Mineral tenure includes two forms of tenure:

- claims, which are registered automatically online and do not require a decision from a statutory decision-maker; and
- leases, which require a statutory decision but cannot be denied as long as technical requirements are met.

The MTA is unique within BC statutes as compared to other natural resource legislation in that proponents can obtain tenure (claims) without prior consultation with Indigenous Nations or private surface land owners. The absence of Indigenous consultation at the claim stage is consistent with other major mining jurisdictions in Canada, including Ontario, Quebec, and Yukon.

IV DISCUSSION:

s.13; s.14; s.16

Pre-engagement with Indigenous Nations has indicated that there is significant concern with the free-entry system. Key concerns include: conferring mineral rights without consultation; registration of claims allowing potential impacts to the landbase without consultation; and sacred and cultural sites being impacted through physical activities undertaken once a claim is

registered. s.13; s.16
s.13; s.16

s.13; s.16

s.13; s.16

V OPTIONS:

s.13; s.16

Approved / Not Approved



Michelle Mungall, Minister

August 6, 2019

Date

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Page 004 of 150

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s.13; s.16

MINISTRY OF ENERGY, MINES AND PETROLEUM RESOURCES

BRIEFING NOTE FOR INFORMATION

I PREPARED FOR: Honourable Michelle Mungall, Minister of Energy, Mines and Petroleum Resources

II ISSUE: Clean Growth Infrastructure Royalty Program -
2019 Request for Applications Evaluation Results and Approved Projects

III BACKGROUND:

The Clean Growth Infrastructure Royalty Program (CGIRP) is part of the Province's comprehensive CleanBC plan for climate action, clean energy and sustainable economic growth. The CGIRP includes two submission categories: Growth and Sustainability. As part of Budget 2019 the Province allocated up to \$150 million in royalty deductions to be competed for under the 2019 Program, with \$90 million allocated to Growth projects, and \$60 million for Sustainability projects.

This new Program combines and refocuses the previous Infrastructure Royalty Credit Program (IRCP) and Clean Infrastructure Royalty Credit Program (CIRCP). The Growth category is expanded from the previous IRCP program to include value-added infrastructure projects, innovative water infrastructure that reduces fresh water use and promotes recycling and clean-up of water, as well as road or pipeline infrastructure. The Sustainability category builds on the CIRCP in support of new industry investment in electrification infrastructure and emissions reduction infrastructure. Both categories support British Columbia (BC) upstream natural gas sector competitiveness.

An overarching goal of CGIRP, consistent with CleanBC, is to help BC have the cleanest natural gas production in the world. BCritish Columbia's oil and gas sector competes against other North American producers that face little or no carbon pricing and weak environmental regulations, and this is even more pronounced on the world stage. The CGIRP helps to position BC to have the most environmentally responsible natural gas development in the world and strengthens provincial competitiveness by differentiating our natural gas energy products.

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IV DISCUSSION:

The Ministry of Energy, Mines and Petroleum Resources (EMPR) issued a competitive RFA on February 13, 2019 that invited the submission of project applications by industry for consideration under the 2019 CGIRP. The deadline for applications was May 10, 2019.

Nineteen companies submitted a total of 27 project applications. A total of 15 applications were submitted under the Growth category and 12 applications were submitted under the Sustainability category. The evaluation and ranking process under the RFA was carried out by Ministry staff and is now complete. All applications fully met the RFA's mandatory criteria, were confirmed as eligible projects, and scored in the evaluation. Appendix A to this briefing note provides a table of project applications submitted to the CGIRP 2019 RFA and their final evaluation scores. Appendix B provides a map of all submitted projects and approved projects.

s.13; s.17

V CONCLUSION:

The TBS approved CGIRP evaluation process was followed, and the evaluation of applications received under the 2019 RFA completed. This briefing note outlines the results of the evaluation process and approval of 24 top ranked projects (12 Growth projects and 12 Sustainability projects) by the Royalty Administrator.

The implementation of CGIRP benefits British Columbia by conserving freshwater resources and reducing greenhouse gas (GHG) emissions, while increasing capital investments in the oil and gas sector. The Project also achieves positive revenue gains to the Crown through new royalties generated by the proposed developments.

The next steps required are to notify all applicants of the 2019 RFA evaluation results in letters from the Royalty Administrator to companies. Information Bulletins have been used to inform the public about the approved projects in previous RFA's for infrastructure royalty deduction programs but are not required.

After notification of applicants by the Royalty Administrator, the process of putting in place project agreements for the approved projects will commence in mid-July. This process usually takes about three months owing to the summer season.

Appendix A: Table of Projects Applications and Evaluation Results from
the CGIRP 2019 RFA

Appendix B: Map of All Submitted Projects and Approved Projects

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Page 009 of 150 to/à Page 010 of 150

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MINISTRY OF ENERGY, MINES AND PETROLEUM RESOURCES

BRIEFING NOTE FOR INFORMATION

I PREPARED FOR: Honourable Michelle Mungall, Minister of Energy, Mines and Petroleum Resources

II ISSUE: Phase 2 of the BC Hydro Comprehensive Review

III BACKGROUND:

In May 2019, Cabinet approved the Terms of Reference for Phase 2 of the BC Hydro Comprehensive Review (Phase 2), which sets out four areas of focus: Supporting CleanBC; Thriving in an Evolving Electricity Sector; Leveraging Our Strengths; and Opportunities for Indigenous Nations and Communities. At the same time, Cabinet approved an internal Phase 2 process that would utilize the extensive knowledge of Ministry of Energy, Mines and Petroleum Resources (EMPR) and BC Hydro staff and would be supplemented by input from expert advisors.

BC Hydro and EMPR staff are preparing for the launch of Phase 2, which includes the public release of the Terms of Reference (Attachment 1), soliciting input from expert advisors, and initiating stakeholder engagement on the key trends and issues in the energy market.

IV DISCUSSION:

Terms of Reference

The launch of Phase 2 will be announced through an InfoBulletin supplemented with updates on both the EMPR and Electricity and Alternative Energy Division (EAED) websites. The EMPR page will state the objective of the Phase 2 review, while the EAED website, which currently houses information on Phase 1, will be expanded to include information on Phase 2. It will include a link to the Terms of Reference and will refer to energy industry experts that will guide the Review (Attachment 2).

Expert Advisors

Eleven potential advisors were selected to provide input across a number of fields relevant to the four focus areas of Phase 2 (Attachment 3). Of these eleven, eight have agreed to participate (Liisa O'Hara, Mark Jaccard, David Bibby, Steven Koch, Blake Shaffer, Caitlin Liotiris, Dan Woynillowicz and Gwenne Farrell). s.22

s.22

At the outset, expert advisors will be asked to review a joint BC Hydro – EMPR Environmental Scan (EnviroScan), which describes the emerging energy trends and issues and to provide their views on which of the trends would be the most impactful / relevant to BC Hydro.

Additional Opportunities for Public Engagement

There is growing interest in understanding the Phase 2 Review process as well as organizations seeking opportunities to provide input into the Review. EMPR staff will arrange two 2-hour engagement sessions in late August/early September. Representatives from key stakeholder groups will be invited to attend either session where they will hear about Phase 2 process and Terms of Reference. At the two meetings, EMPR staff will solicit feedback from stakeholders on the following questions:

1. Do you have any suggestions on how BC Hydro can remain sustainable in the future while delivering benefits to all British Columbians?
2. Reflecting specifically on the Phase 2 Terms of Reference:
 - Do you have any suggestions on how to position BC Hydro for the future so that it can further support CleanBC?
 - With the changes occurring in the electricity sector, and what steps can BC Hydro take so that British Columbians can benefit from new technologies and markets?
 - Are there other areas of strength that BC can leverage with respect to (clean) energy trade?
 - What type of opportunities can BC Hydro provide Indigenous Nations within the energy sector?
 - Do you have any suggestions on how BC Hydro currently works with communities and whether there are alternate opportunities for the benefit of both parties?

Potential stakeholder groups include:

s.13; s.16

These stakeholders may also choose to provide written submissions to the Ministry for consideration.

V CONCLUSION:

Government Communications and Public Engagement will be managing the roll out of the InfoBulletin announcing the BC Hydro Phase 2 Terms of Reference and updating EMPR websites. ^{s.13}

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Timely

engagement on the energy trends and issues that will shape BC Hydro's future will provide interested stakeholders with an opportunity to be involved in Phase 2 at an early stage.

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Attachments (4)

Attachment 1

Terms of Reference

Comprehensive Review of BC Hydro – Phase 2

Context

The 2017 Mandate Letter to the Minister of Energy, Mines and Petroleum Resources directs the ministry to undertake a Comprehensive Review of BC Hydro and to work with BC Hydro to develop a refreshed plan to keep rates affordable over the long-term.

In June 2018, Government announced a two-phase approach for carrying out the Minister's mandate:

- Phase 1 - examine opportunities to keep BC Hydro's rates affordable by increasing BC Hydro's revenues, reducing its costs and protecting ratepayer interests by re-empowering the British Columbia Utilities Commission (BCUC) to oversee BC Hydro's costs and activities; and
- Phase 2 - explore global energy sector shifts and provincial strategies that could transform the way BC Hydro does business.

Phase 1 of the Comprehensive Review of BC Hydro is now complete. On February 14, 2019, the Province released a final report on this first phase, which details actions to ensure sound financial and regulatory oversight of BC Hydro, and a five-year rate forecast reflecting cost and revenue strategies to keep rates affordable.

In December 2018, Government released its CleanBC plan, a combined economic development, energy and climate strategy. CleanBC offers a pathway that will enable our Province to seize opportunities for innovation and growth. To meet the goals in CleanBC, we must increase our use of cleaner energy, including electricity generated from renewable sources, to shift away from our reliance on fossil fuels for transportation, industry, and buildings. CleanBC's actions will get British Columbia (BC) approximately 75% of the way to legislated 2030 greenhouse gas (GHG) reduction targets. Achieving the remaining 25%, and ultimately the 2040 and 2050 targets, will require additional clean energy.

Objective

The objective of the Comprehensive Review's second phase is to develop recommendations for how BC Hydro can accomplish the provincial policy objectives laid out in the CleanBC plan,

including how BC Hydro can support meeting BC's legislated 2030, 2040, and 2050 GHG reduction targets in a manner that ensures BC Hydro sustainability in the future for the benefit of British Columbians.

The Review will consider the potential impacts of North American energy and market trends, the needs of current and future BC Hydro customers, evolving technologies and utility structures, the affordability of electricity to consumers, and opportunities to involve indigenous peoples and communities.

The recommendations from the Phase 2 Review will be used to inform BC Hydro's Integrated Resource Plan that will be filed with the BCUC in early 2021.

Governance

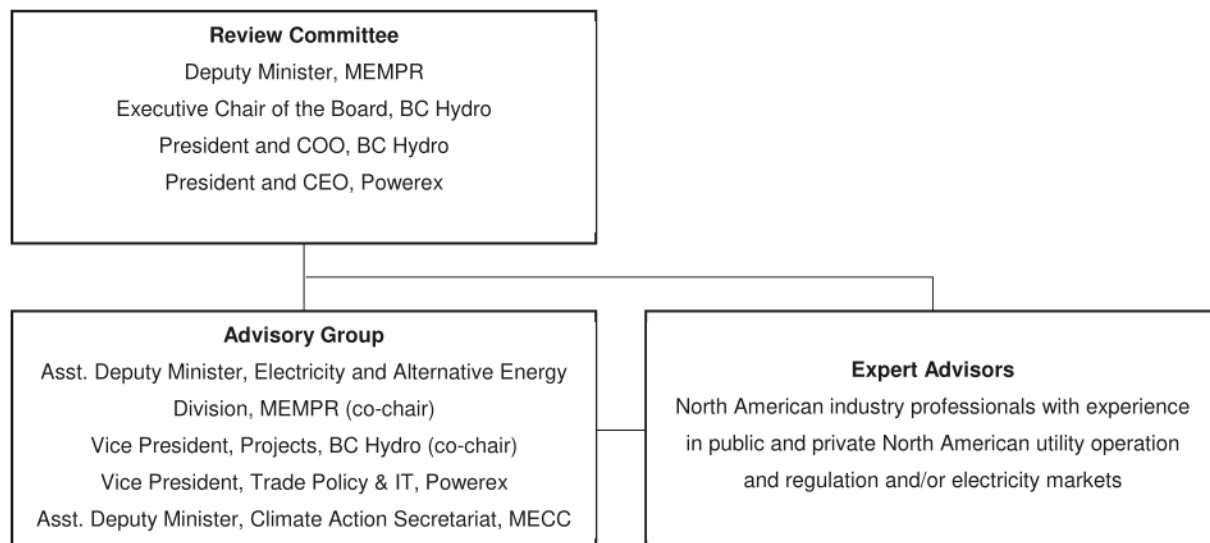
Overseeing the Phase 2 Review process will be a Review Committee consisting of:

- Deputy Minister of the Ministry of Energy, Mines and Petroleum Resources (MEMPR),
- Executive Chair of the BC Hydro Board of Directors,
- President and Chief Operating Officer (COO) of BC Hydro, and
- Chief Executive Officer (CEO) of Powerex.

This Review Committee is responsible for ensuring that the objective of the second phase of the Review is met.

An Advisory Group consisting of senior staff from MEMPR, Ministry of Environment and Climate Change (MECC), BC Hydro, and Powerex will provide advice to the Review Committee, draft material for their consideration and prepare a final report that includes the recommendations of the Review Committee. Industry experts that have extensive experience in public and private North American utility operation, regulation, and/or electricity markets will inform and guide Review Committee recommendations.

Governance Chart - Phase 2 Review:



Areas of Interest

The Review Committee, with the support of the Advisory Group and advice from industry experts, is tasked with addressing questions within four areas of interest, with the goal of gathering the information necessary to develop a final report with recommended actions for the utility.

1. Supporting CleanBC

CleanBC is central to reducing GHG emissions while also meeting BC's energy and economic development goals. Any recommended changes to BC Hydro must achieve the electrification goals set out in CleanBC to meet our legislated 2030 GHG reduction targets and lay the groundwork for additional GHG emissions reductions to meet the Province's legislated 2040 and 2050 emissions targets. Achieving the electrification targets will support the production of lower carbon natural resources for export. The Review will identify additional opportunities to reduce GHG emissions through fuel-switching, electrification, energy efficiency and conservation and will include responses to the following questions:

- What is required to ensure that new customer demand for access to clean electricity from the grid is achieved in an efficient, cost-effective, and timely manner?

- How should the costs of this new access be allocated between existing and new customers? Is there a role for government(s) in financing the infrastructure to provide this access?
- What can/should BC Hydro do to encourage fuel switching to increase the use of clean electricity as an alternative to fossil fuels and reduce GHG emissions?
- How can BC Hydro and the Province's CleanBC Better Homes/Better Buildings program coordinate further to address climate change by reducing GHG emissions and meeting CleanBC objectives?

2. Thriving in an Evolving Electricity Sector

The Phase 2 Review final report will describe the trends in technology, changes in electricity markets and transformative approaches used by other electric utilities (e.g. distributed generation, microgrid and digital utilities). Recommendations will address how BC Hydro must adapt to a broad range of future scenarios and evolve its existing structure, services, and assets in support of ensuring BC Hydro's sustainability for the benefit of all British Columbians. At a minimum, the Phase 2 Review final report will address the following questions:

- Which industry trends are most likely to have an impact on BC Hydro?
- What actions are needed to ensure that BC Hydro is able to benefit from new markets and integrate new technologies while keeping rates affordable?
- Are there opportunities for BC Hydro to provide customers with more energy choices and information?
- Are changes needed to BC Hydro's governance structure to allow the utility to pursue new business opportunities?

3. Leveraging Our Strengths

BC Hydro's wholly-owned subsidiary Powerex currently buys and sells electricity in other markets throughout the Western Interconnection. The Phase 2 Review will consider whether there are opportunities to enable increased participation in external markets to the benefit of BC Hydro ratepayers. The Phase 2 Review final report will make recommendations that consider each of the following questions:

- What constraints, if any, reduce Powerex's ability to trade electricity in the Western Interconnection today or in the future?
- Is there an opportunity or actions that can be taken that will enable Powerex to expand its business in markets outside of BC, further leveraging BC Hydro's clean generation and/or Powerex's expertise in energy markets?
- How should cost effective clean energy located outside of BC be considered in BC Hydro's planning and operations?
- Is there an opportunity to own and/or operate assets outside of BC Hydro's current service area that would benefit BC Hydro's ratepayers?

4. Opportunities for Indigenous Nations and Communities

In support of BC's commitment to reconciliation with Indigenous Peoples, the Review will consider future opportunities or new roles for Indigenous Nations in the development, ownership, or operation of electrical infrastructure or services. In relation to BC Hydro's existing business and proposed new lines of business, the Phase 2 Review final report will include recommendations to enhance Indigenous Nations' participation in the energy sector. The Review will also consider how BC Hydro currently works with communities and explore alternatives.

For each of these four areas of interest, the Expert Advisors will provide advice on opportunities for program and rate design, changes to BC Hydro's governance structure and regulatory framework, and other opportunities for improved organizational readiness to enhance BC Hydro's financial and operational sustainability to keep rates affordable over the long term.

Process

The Review Committee and Advisory Group will undertake the Review June 2019 to November 2019 utilizing the advice of the Expert Advisors as and when needed. In late fall 2019, stakeholders and Indigenous Peoples will be asked to provide feedback on interim Phase 2 results.

A final report will be completed in early 2020 and will outline the Review Committee's recommendations on policy, governance, and strategy to ensure BC Hydro's sustainability and ability to contribute to CleanBC and other Government policy objectives.

Attachment 2

BC Hydro Review Phase 2

Draft language to update the EMPR and EAED webpages when TOR is released publicly

UPDATE #1

Link: <https://www2.gov.bc.ca/gov/content/governments/organizational-structure/ministries-organizations/ministries/energy-mines-and-petroleum-resources>

Phase 2 of the Comprehensive Review of BC Hydro

Learn more about the steps being taken to create a strategy, for the benefit of British Columbians, for BC Hydro to continue to provide its customers with clean energy at competitive rates through the continuing evolution of BC Hydro in response to changes in climate, consumer demand, technology and British Columbia's commitment to reconciliation with Indigenous Nations.

UPDATE #2

Link: <https://www2.gov.bc.ca/gov/content/industry/electricity-alternative-energy/electricity/bc-hydro-review>

Phase 2 of the Comprehensive Review of BC Hydro

The objective of Phase 2 of the Comprehensive Review of BC Hydro is to create a strategy, for the benefit of British Columbians, for BC Hydro to continue to provide its customers with clean energy at competitive rates through the continuing evolution of BC Hydro in response to changes in climate, consumer demand, technology and British Columbia's (BC's) commitment to reconciliation with Indigenous Nations.

Following completion of Phase 1 of the Review of BC Hydro in February 2019 (see below for more information), Government initiated Phase 2 in June 2019. This second phase will be a broad, transformational review that will examine some of the significant changes and shifts taking place in the British Columbia and continental energy sectors and will produce recommendations to strategically position BC Hydro and the Province for long-term success, including BC Hydro's role in achieving the electrification goals set out in CleanBC. Phase 2 will leverage BC Hydro's strengths and focus on:

- BC Hydro's role in supporting CleanBC and meeting the Province's legislated 2030, 2040, and 2050 greenhouse gas reduction targets;

- future opportunities or new roles for Indigenous Nations and for communities in the energy sector;
- integrating new technologies and electricity market trends into BC Hydro's structure, services and assets while keeping rates affordable; and
- new opportunities for BC Hydro to expand its business in markets outside BC to the benefit of ratepayers.

Phase 2 will be guided by the [Comprehensive Review of BC Hydro Phase 2 – Terms of Reference](#). The Ministry of Energy, Mines and Petroleum Resources will work with BC Hydro; energy industry experts with extensive experience in North American utility operation, technology, regulation and electricity markets; and the Ministry of Environment and Climate Change Strategy, to produce an interim report before the end of the year.

Indigenous Nations and organizations, stakeholders and the public will have the opportunity to provide comments and feedback on the interim report.

A final report with recommendations will be completed in early 2020.

[The following language will be posted on a separate page on the EAED site]

Phase 1 of the Comprehensive Review of BC Hydro

The first phase of the review was completed in February 2019.

Government worked with BC Hydro to identify cost savings, efficiencies, new revenue streams and other changes to keep electricity rates low, while ensuring sound regulatory and financial oversight of BC Hydro and enabling implementation of government policy priorities.

Phase 1 was an internal review, carried out by an advisory group consisting of staff from the Ministry of Energy, Mines and Petroleum Resources, the Ministry of Finance and BC Hydro. This work was guided by the [2018 Comprehensive Review of BC Hydro Phase 1 – Terms of Reference \(PDF, 282 KB\)](#).

The key outcomes of Phase 1 are:

1. A new five-year (April 1, 2019 – March 31, 2024) rates forecast that reflects cost and revenue strategies to keep rates affordable; and
2. A regulatory framework that enhances the British Columbia Utilities Commission's (BCUC's) oversight of BC Hydro.

For further information on the outcomes, please read the [Comprehensive Review of BC Hydro: Phase 1 Final Report \(PDF, 828 KB\)](#).

Among other things, the Phase 1 Final Report has informed BC Hydro's April 1, 2019 – March 31, 2021 Revenue Requirements application, which was filed with the BCUC at the end of February 2019.

Indigenous Engagement on the Standing Offer Program

As a result of Phase 1, BC Hydro's Standing Offer Program (SOP) will be indefinitely suspended. The Province understands that a significant number of Indigenous Nations in British Columbia have expressed interest in developing or partnering on clean energy projects under this program. The Province is seeking to engage with Indigenous Nations and organizations to explore how the indefinite suspension of the SOP may affect the economic interests of individual Indigenous Nations, and to explore alternate opportunities to meet those interests, where they exist.

For further information, please visit the [BC Government's Engagement on the SOP Suspension website](#).

Independent Report on BC Hydro's Purchase of Power from Private Power Producers

Through a separate process, the Minister of Energy, Mines and Petroleum Resources contracted with an independent consultant, Ken Davidson, to examine the factors that have influenced BC Hydro's purchases of electricity from private power producers. The report also looks at the impact these purchases have had on BC Hydro costs and rates.

For more information, read the [Review of BC Hydro's Purchase of Power from Independent Power Producers Report \(PDF, 1.6 MB\)](#).

Attachment 3 – Biographies of Expert Advisors

Liisa O’Hara – Former BCUC Commissioner

Liisa O’Hara served as Commissioner to the BCUC for 10 years. As BCUC Commissioner, Liisa participated in oversight of the Province’s natural gas and electricity utilities, the regulation of rates, and the development of new facilities. As Commissioner, she also developed a strong interest in clean energy solutions. s.22

s.22

Stephen Koch – Director of Emerging Issues, Canadian Electricity Association

Stephen Koch works with senior Canadian Electricity Association members and industry experts to identify, predict, and prepare for technological innovations and potentially disruptive market changes across the energy sector. s.22

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David Bibby – Head of Global Digital Services – Finning International

David Bibby is a future-focused technology executive with over 25 years of experience in strategic technology leadership within growth-oriented global organizations. He has been the Head of Global Digital Service (Finning Digital) at Finning International since January 2016. Prior to this, he has worked as the Vice President, Information Technology, at VanCity, and the Senior Vice President of Information Technology at Canaccord Genuity Corporation.

s.22

Blake Shaffer – Adjunct Assistant Professor – University of Calgary, Department of Economics

Blake Shaffer has extensive experience in the energy sector, with a specific focus on electricity markets. Blake enjoyed a 15-year career that has taken him from the trading arm of BC Hydro, to Lehman Brothers and Barclays Capital in New York as a senior energy trader, and finally as Director of Energy Trading at Transalta Corporation in Calgary, Alberta. s.22

Caitlin Liotiris – Energy Strategies Consultant

Caitlin Liotiris leads many of Energy Strategies' efforts in electricity market development, regional transmission planning and policy, and energy procurement arenas. Caitlin provides clients with a unique combination of technical capabilities and energy policy perspective. Her primary work efforts include advocacy at regional forums, performing market and regulatory evaluations, and facilitating the incorporation of new policies and market structures into the firm's modeling tools. s.22

Dan Woynillowicz – Policy Director – Clean Energy Canada

Dan Woynillowicz is an accomplished non-profit leader working to identify and implement climate solutions. An experienced analyst, strategist and advocate, he has significant knowledge and experience in the fields of energy and environmental policy. He joined Clean Energy Canada in December 2012 as Policy Director. s.22

Gwenne Farrell – former Vice President of MoveUP

Gwenne Farrell worked as a Vice-President of MoveUp from May 2005 until November 2018. Previous to that she worked as a Financial Analyst with BC Hydro. In the spring of 2007, Gwenne was also elected to the office of Secretary-Treasurer of Canadian Office and Professional Employees Union (COPE), Local 378's National Union.^{s.22}

s.22

Mark Jaccard – Professor – Simon Fraser University School of Resource and Environmental Management

Mark Jaccard has been a professor since 1986 in the School of Resource and Environmental Management at Vancouver's Simon Fraser University. The only exception is 1992 to 1997, s.22
serve as Chair and Chief Executive Officer of the BCUC.

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Page 026 of 150 to/à Page 028 of 150

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MINISTRY OF ENERGY, MINES AND PETROLEUM RESOURCES

BRIEFING NOTE FOR INFORMATION

PREPARED FOR: Honourable Minister Michelle Mungall, Ministry of Energy, Mines and
Petroleum Resources

s.13; s.16

Page 030 of 150 to/à Page 031 of 150

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s.13; s.16

MINISTRY OF ENERGY, MINES AND PETROLEUM RESOURCES

BRIEFING NOTE FOR INFORMATION

PREPARED FOR: Honourable Michelle Mungall, Minister of Energy, Mines and Petroleum Resources

- I. ISSUE:** Information on the five closed sessions at the Energy and Mines Ministers' Conference

s.13; s.16

Page 034 of 150 to/à Page 035 of 150

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s.13; s.16

MINISTRY OF ENERGY, MINES AND PETROLEUM RESOURCES

BRIEFING NOTE FOR INFORMATION

I PREPARED FOR: Honourable Michelle Mungall, Minister of Energy, Mines and Petroleum Resources

II ISSUE: Energy and Mines Ministers' Conference 2019 Closed Joint Session

s.13; s.16

s.13; s.16

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Page 038 of 150 to/à Page 042 of 150

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s.13; s.16

MINISTRY OF ENERGY, MINES AND PETROLEUM RESOURCES

BRIEFING NOTE FOR INFORMATION

I PREPARED FOR: Honourable Michelle Mungall, Minister of Energy, Mines and Petroleum Resources

II ISSUE: Logistics information for the 2019 Energy and Mines Ministers' Conference

III BACKGROUND:

The table below outlines the logistical documents for the 2019 Energy and Mines Ministers' Conference (EMMC).

Document	Description	Annex
1. Block Agenda	1-page overview of EMMC events	<u>Annex 1</u>
2. EMMC Minister walkthrough	Summary of Minister Mungall's conference engagements	<u>Annex 2</u>
3. EMMC program	Details of each conference session	<u>Annex 3</u>
4. Run of Show	Minute by minute agendas for each session	<u>Annex 4</u>
5. Maps	Maps of: 1. St. Eugene Resort property 2. Meeting rooms	<u>Annex 5</u>
6. Seating plans	Seating plans for 1. Open session day 1 2. Open session day 2 3. Minister's long-table dinner (Day 2)	<u>Annex 6</u>

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ANNEX 1: EMMC 2019 – BLOCK AGENDA

	MONDAY, JULY 15	TUESDAY, JULY 16	WEDNESDAY, JULY 17
8:00-9:00	7:30 – 14:00 Optional Site Visit: Site tour to Elk Valley mining operations. Includes a stop in Sparwood for a welcome from the Mayor.	7:00 – 8:15 Breakfast	7:00 – 8:30 Breakfast
9:00-10:00		8:30 - 9:30 Open Session 2: Sustainable Finance	8:30 - 8:45 Official Photo 8:45 - 10:30 Mines Ministers' Closed Session s.13; s.16
10:00-11:00		9:30- 10:30 Open Session 3: Women in Natural Resources	10:30 – 12:15 Energy Ministers' Closed Session s.13; s.16
11:00-12:00		10:30 – 10:45 Break 10:45 – 12:15 Open Session 4: Competitiveness: Communicating Canada's Global Energy and Mining Advantage	
12:00-13:00		12:15 – 12:30 Break	12:15 – 12:30 Break
13:00-14:00		12:30 – 13:30 Lunch Speaker: Innovation: How Artificial Intelligence Can Unlock Value in Canada's Energy and Mining Sectors	12:30 – 13:30 Lunch Session Global Trade
14:00 – 15:00	14:00 – 15:00 FPT Ministers, 5 NIOs, Ktunaxa and ʔaᑭam	13:30 – 13:45: Closing Remarks 13:45 – 14:30 Break	13:30 – 15:00 Joint Energy and Mines Ministers' Closed Session s.13; s.16
15:00-16:00	15:00 – 15:15 Official Photo 15:15 – 15:30 Room Change 15:30 – 16:00 Welcome Session Co-chairs and Ktunaxa/ ʔaᑭam	14:30 – 16:30 Stakeholders Tours of the Interpretive Centre at St Eugene	15:00 – 15:15 Break 15:15 – 15:45 Final Joint Energy and Mines Ministers' Closed Session s.13; s.16
16:00-17:00	16:00 – 17:30 Open Session 1: Indigenous-Led Session(s) (TBC) Indigenous organizations co-lead	14:30 – 16:30 Optional Site Visit: ʔaᑭam First Nation Community District Heating System Building Retrofit	15:45-16:00 Break 16:00 – 16:30 Press Conference
17:00-18:00	17:30 – 18:30 Reception	16:00 – 17:30 Networking Reception (Optional for Ministers) <i>*Stakeholder program ends after the networking reception</i>	<i>* Approach to all Closed Sessions: Focus will be on Ministerial discussion (rather than presentations).</i>
18:00-19:00	18:30-22:00 EMMC Banquet Keynote Speaker	17:30 – 18:30 Break	
19:00-22:00		18:30 – 21:00 Dinner	

Ministers and Indigenous Delegates	All Delegates	Stakeholders only	Ministers/DMs only
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ANNEX 2: EMMC 2019 LOGISTICS & WALKTHROUGH: MINISTER ENGAGEMENTS

Prepared for Honourable Minister Michelle Mungall

Monday July 15

Time	Event	Details
2:00 PM - 3:00 PM Room: Chief David	TBC FPT Ministers and all Indigenous Leaders	Description Informal meeting with FPT Ministers to meet with all Indigenous delegates, including the 5 National Indigenous Organizations (NIOs) and Indigenous delegates from BC. Minister's role <ul style="list-style-type: none"> • 2:00 PM – FPT ministers participate in an informal discussion with Indigenous delegates.
3:30 PM – 4:00 PM Room: Pavilion	Welcome Session	Description Elder's prayer, opening remarks from co-host Ministers, Kathryn Teneese (Chair, Ktunaxa Nation Council) and Chief Joe Pierre (?aqam). Minister's role <ul style="list-style-type: none"> • 3:20 PM – Minister Mungall arrives at St. Eugene Pavilion • 3:30 PM – Emcee Ryan Forman welcomes attendees and introduces Elder to deliver prayer • 3:42 PM – Minister Mungall delivers remarks (5 minutes).
4:00 PM – 5:30 PM Room: Pavilion	Open Session #1: Indigenous-led session	Description Moderated panel discussion on Indigenous participation in natural resource development, BC design and led. Minister's role <ul style="list-style-type: none"> • No speaking role. Minister attend session. • DM Dave Nikolejsin moderate
6:30 PM – 10:00 PM Room: Pavilion	EMMC Banquet Keynote Speaker	Description Includes silent auction, dinner, geologist medal presentation and entertainment. Mayor Don McCormick of Kimberley is confirmed to emcee banquet. Minister's role <ul style="list-style-type: none"> • 7:15 PM – Emcee Don McCormick introduces Minister Mungall, Co-chair of EMMC 2019. • 7:16 PM – Minister Mungall delivers keynote speech (10 minutes). • 8:16 PM - Minister Eyre presents the 2018 Provincial and Territorial Geologist Medal to Ken Ashton.

Tuesday July 16

Time	Event	Details
8:30 am – 1:45 PM Room: Pavilion	Open sessions #2-5 and lunch session	<p>Description Open sessions on: sustainable finance, women in natural resources, competitiveness and artificial intelligence.</p> <p>Minister's role</p> <ul style="list-style-type: none"> • Lunch is served in the pavilion at 12:30 PM. • 1:36 PM – Ryan Forman to introduce Minister Mungall • 1:37 PM – Minister Mungall provide some closing remarks on the open sessions. • 1:45 PM - Ryan Forman will thank participants and close the session.
2:30 PM – 4:30 PM	Optional Site tours and reception	<p>Description Two separate tours of the Heating System Building will depart from the St. Eugene Courtyard at the front of the property at 2:30 PM and 3:30 PM. A tour guide with a sign labelled “Retrofit Tour” will greet you at the meeting place. Participants will take a short walk across the St. Eugene property to the ʔaąam First Nation Community centre.</p> <p>Minister's role</p> <ul style="list-style-type: none"> • 4:30 PM – Return to St Eugene for optional Reception that will take place in the Chief David Room from 4:00 PM to 5:30 PM.
6:25 PM – 9:00 PM Room: St Eugene Courtyard	Long table dinner	<p>Description Long table dinner for Ministers in the Courtyard at St. Eugene. Ktunaxa legends story told by Chief Joe Pierre.</p> <p>Minister's role</p> <ul style="list-style-type: none"> • 6:25 PM –Minister arrives at the Courtyard and is greeted by Chief Joe Pierre, Chief of the ʔaąam and takes assigned seat • 6:30 PM - 7:45 PM - Dinner • 9:00 PM – Provide thank you to Chief Joe Pierre and guests

Wednesday July 17

Time	Event	Details
8:45 am – 10:30 am Room: Pavilion	Mines Ministers’ Closed Session	s.13; s.16
10:30 am – 12:15 PM Room: Pavilion	Energy Ministers’ Closed Session	
12:30 PM – 1:30 PM Room: Pavilion		s.13; s.16
1:30 PM – 2:30 PM Room: Pavilion		
2:45 PM – 3:15	Final closed session joint	s.13; s.16

PM Room: Pavilion	session	s.13; s.16
3:30 PM – 4:00 PM Room: Pavilion	Press conference	Minister's role <ul style="list-style-type: none"> • 3:30 PM – Co-host ministers arrive in St. Eugene Pavilion room and take their place at the podium.

ANNEX 3: EMMC PROGRAM

Updated July 7, 2019

EMMC 2019 – Draft Program

Monday July 15th – Pre-Conference activities		
<i>For information on optional site visits*, please visit emmc2019.ca</i>		
<i>* Registration required</i>		
14:00 – 15:00 Room: Chief David Seating: TBD	TBC Private Discussion – FPT Ministers and invited Indigenous representatives.	Meeting hosted by FPT Ministers to meet informally with invited Indigenous representatives.
15:00 – 15:15	Official Photo	
15:15 – 15:30	Transition break	
15:30 – 16:00 Room: Pavilion Seating: Banquet	Welcome Session	<ul style="list-style-type: none"> Elder's prayer Opening Remarks from co-host Ministers, Joe Pierre, Chief, ʔaąam, and Katheryn Teneese, Chair, Ktunaxa Nation Council
16:00 – 17:30 Room: Pavilion Seating: Banquet	Open Session 1: Indigenous-Led Session	<p>Moderator: Dave Nikolejsin, Deputy Minister</p> <p>Moderated panel discussion on Indigenous participation in Natural Resource development</p> <p>Panel Discussion with Ktunaxa Nation, Haisla Nation, Sauteau Nation, Nisga'a Lisims Government, Squamish Nation and NIOs</p> <p>Speakers:</p> <ul style="list-style-type: none"> Kathryn Teneese, Ktunaxa Nation Council or Joe Pierre, Chief, ʔaąam Crystal Smith, Chief Councilor, Haisla Nisga'a Lisims Government TBC Ken Cameron, Chief, Sauteau Nation Ian Campbell, Chief, Squamish Nation (TBC)
17:30 – 18:30	Break - Refreshments and appetizers to be served in Chief David room	
18:30 – 22:00 Room: Pavilion Seating: Banquet	EMMC Banquet	<ul style="list-style-type: none"> Silent auction and dinner Keynote Speech by Minister Mungall Minister Sohi to deliver remarks Presentation of Geologist's Medal by Minister Eyre. Entertainment by local songwriter and guitar player Don Glasrud.

Legend

ALL PARTICIPANTS
MINISTERS & INDIGENOUS LEADERS
MINISTERS ONLY

Updated July 7, 2019

EMMC 2019 – Draft Program

Tuesday, July 16th – Conference – Open Sessions		
8:30 – 9:30 Room: Pavilion Seating: Banquet	Open Session 2: Sustainable Finance	Moderated Discussion with Financial Experts Moderator: Bruce Sprague, Chief Financial Officer, NexGen Energy Ltd. Speakers: <ul style="list-style-type: none"> Joy Romero, Vice President of Technology & Innovation, Canadian Natural Resources Limited Andy Chisholm, Member of the Sustainable Finance Expert Panel Susan Golyak, Manager, ESG Integration, BCI Moderated Q&A with the Audience
9:30 – 10:30 Room: Pavilion Seating: Banquet	Open Session 3: Women in Natural Resources	Moderator: Jamile Cruz, Co-Founder and Executive Director, Inclusion and Diversity Consulting Speakers: Build Together, Lisa Langevin and Gabrielle Herle Breakout Discussion: Tables of delegates will discuss best practices/actions their organizations have taken to improve gender equality and diversity Idea Sharing: Pre-selected organizations/governments will be invited to share specific initiatives/actions of interest
10:30 – 10:45	Health Break	
10:45 – 12:15 Room: Pavilion Seating: Banquet	Open Session 4: Competitiveness: Communicating Canada's Global Energy and Mining Advantage	NRCan video presentation: Energy and Mining Moderator: Hunter Tura, Bruce Mau Design Lightning talk with: <ul style="list-style-type: none"> Susannah Pierce, LNG Canada Sheila Risbud, Director Government Affairs, Teck Resources Moderated Ministers Dialogue with Speakers
12:15 – 12:30	Break	

Legend

ALL PARTICIPANTS
MINISTERS & INDIGENOUS LEADERS
MINISTERS ONLY

Updated July 7, 2019

EMMC 2019 – Draft Program

12:30 – 13:30 Room: Pavilion Seating: Banquet	Lunch Speaker: Innovation: How Artificial Intelligence Can Unlock Value in Canada’s Energy and Mining Sectors	Keynote speech on the potential of AI technologies and applications for innovation and clean growth in Canada’s energy and mining sectors. Speaker: Jason Hein, Associate Professor, UBC EMMC 2020 welcome: <u>Ranji Pillai</u> , Yukon Minister of Energy, Mines and Resources, to welcome delegates to EMMC 2020, in	
13:30 – 13:45 Room: Pavilion Seating: Banquet	Closing Remarks	• Brief remarks from co-host Ministers to close the day’s plenary sessions	
13:45 – 14:30	Break		
14:30 – 15:30	Optional Site Visit for Ministers: ᑭᐱᑭᐱ First Nation Community District Heating System Building Retrofit	DM Meeting: Energy Information Room: St Mary’s	Tours* of the Interpretive Centre at St. Eugene <i>For stakeholders</i> <i>*Registration required</i>
15:30 – 16:30			
16:00 – 17:30 Room: Chief David Seating: Cocktail reception	Networking Reception (Optional for Ministers)	Refreshments and appetizers to be served in the Chief David room. <i>Stakeholder Program ends after the networking reception</i>	
18:30 – 21:00 Room: Courtyard Seating: Long tables	Private Dinner for Ministers/DMs	Private dinner for Ministers and Deputy Ministers Legends presentation by Chief Joe Pierre , <u>ᑭᐱᑭᐱ</u>	

Legend

Δ I DELEGATES
MINISTERS & INDIGENOUS LEADERS
MINISTERS ONLY

Updated July 7, 2019

EMMC 2019 – Draft Program

Wednesday, July 17th – Federal, Provincial and Territorial Ministers’ Meeting -- Closed Sessions	
8:30 – 8:45 Location : TBD	Official photo
8:45 – 10:30 Room: Pavilion Seating: Hollow square	Closed Mines Ministers’ Session s.13; s.16
10:30 – 12:15 Room: Pavilion Seating: Hollow square	Closed Energy Ministers’ Session

Legend

ALL PARTICIPANTS
MINISTERS & INDIGENOUS LEADERS
MINISTERS ONLY

Updated July 7, 2019

EMMC 2019 – Draft Program

12:15 – 12:30	Break	
12:30 – 13:30 Room: Pavilion Seating: hollow square	Lunch Session	Opening remarks: Minsiter Sohi (TBC) Global Trade Speaker: David Alward, Consul General of Canada in Boston, US
13:30 – 15:00 Room: Pavilion Seating: hollow square	Joint Closed Energy and Mines Ministers' Session	s.13; s.16
15:00 – 15:15	Break	
15:15 – 15:45 Room: Pavilion Seating: hollow square	Joint Closed Energy and Mines Ministers' Session	s.13; s.16
15:45 – 16:00	Break	
16:00 – 16:30 Room: TBD	Press Conference <ul style="list-style-type: none"> EMMC Co-chairs to offer remarks Other Ministers will be invited to attend 	

Legend

ALL PARTICIPANTS

MINISTERS & INDIGENOUS LEADERS

MINISTERS ONLY

ANNEX 4: RUN OF SHOW

WELCOME SESSION

Monday, July 15, 2019 3:30 PM – 4:00 PM

Room: Pavilion

Seating: Banquet

Time	Activity	Notes
3:30 PM	Welcome	Ryan Forman, Executive Director, BC Ministry of Energy, Mines and Petroleum Resources and event emcee. Welcomes attendees and introduces Elder (TBC) to deliver a prayer.
3:33 PM	Elder's prayer	Elder or Chief Joe Pierre delivers prayer to begin proceedings.
3:40 PM	Introduction	Ryan Forman introduces Minister Mungall, Co-chair of EMMC 2019.
3:42 PM	Remarks (BC)	Minister Mungall delivers remarks.
3:47 PM	Introduction	Ryan Forman introduces Joe Pierre, Chief of the ʔaḡam community, Ktunaxa Nation and Kathryn Teneese, Chair of the Ktunaxa Nation Council.
3:48 PM	Remarks (Ktunaxa Nation)	Chief Joe Pierre and Kathryn Teneese deliver remarks.
3:53 PM	Introduction	Ryan Forman introduces Minister Sohi.
3:54 PM	Remarks (GoC)	Minister Sohi delivers remarks (approx. 5 minutes).
4:00 PM	Event concludes	

**OPEN SESSION: INDIGENOUS PARTICIPATION IN NATURAL RESOURCE
DEVELOPMENT**

Monday, July 15, 2019 4:00 PM – 5:30 PM

Room: Pavilion

Seating: Banquet

Time	Activity	Notes
4:00 PM	Event starts	This session immediately follows the Welcome Session. It will take place in the same room. Dave Nikolejsin will serve as moderator.
4:00 PM [5 mins]	Welcome	Moderator to introduce the session and welcome the audience. This will include an acknowledgement of Ktunaxa territory and provide introductions for the panel participants.
4:05 PM [60 mins]	Panel Discussion	Moderated panel discussion with: <ul style="list-style-type: none"> • Kathryn Teneese, Chair of the Ktunaxa Nation Council • Chief Crystal Smith, Haisla Nation • Chief Ian Campbell, Squamish Nation • Chief Ken Cameron, Saulteau First Nations • Corinne Mckay, Secretary Treasurer, Nisga'a Lisims Government
5:05 PM [20 mins]	Audience Q&A	Moderator will ask for questions for the panelists from the audience
5:25 PM [5 mins]	Closing Remarks	Moderator to provide closing remarks.

BANQUET DINNER

Monday, July 15, 2019 6:30 PM – 10:00 PM

Room: Pavilion

Seating: Banquet

Time	Activity	Notes
6:30 PM	Arrival at St. Eugene Pavilion room	Delegates arrive in the St. Eugene Pavilion room and is greeted by Don McCormick, Mayor of Kimberley and event emcee and Kristin Parsons, Executive Director of the Cranbrook Chamber of Commerce.
6:40 PM	Welcome and introduction	Mayor McCormick provides opening remarks and introduces Kristin Parsons.
6:45 PM	Remarks (Chamber)	Kristin Parsons delivers remarks.
6:47 PM	Introduction	Mayor McCormick introduces the Cranbrook Youth Ambassadors.
6:48 PM	Performance	The Cranbrook Youth Ambassadors perform a traditional Cranbrook welcome.
6:50 PM	Opening of silent auction	Mayor McCormick introduces representatives from Street Angel of the Ktunaxa Nation Council and recipients of silent auction proceeds. Mayor McCormick opens bidding for silent auction.
6:55 PM	Buffet	Mayor McCormick invites attendees to the buffet, starting with Table 1.
7:30 PM	Close of silent auction	Mayor McCormick announces closing of bidding for the silent auction.
7:40 PM	Introduction	Mayor McCormick introduces Minister Mungall, Co-chair of EMMC 2019.
7:41 PM	Remarks (BC)	Minister Mungall delivers remarks.
7:53 PM	Introduction	Mayor McCormick introduces NRCan.
7:54 PM	Remarks (GoC)	NRCan delivers remarks.
8:05 PM	Silent auction results	Mayor McCormick announces the results of the silent auction.
8:15 PM	Introduction	Mayor McCormick introduces Bronwyn Eyre, Saskatchewan Minister of Energy and Resources.
8:16 PM	Medal presentation	Minister Eyre presents the 2018 Provincial and Territorial Geologists Medal to Ken Ashton. Photo opportunity.
10:00 PM	Event concludes	

OPEN SESSION ON SUSTAINABLE FINANCE

Tuesday, July 16, 2019 8:30 AM – 9:30 AM

Room: Pavilion

Seating: Banquet

Time	Activity	Notes
8:30 AM [5 mins]	Welcome	Ryan Forman welcomes audience for the day. <i>[Moderator and Panelists already on stage]</i>
8:35 AM [5 mins]	Welcome from Moderator	Bruce Sprague will open the session with a few remarks.
8:40 AM [5 mins]	Introduce Speakers	Moderator will introduce guest speakers.
8:45 AM [25 mins]	Brief remarks and Moderated Discussion	<ul style="list-style-type: none"> • Andy Chisholm will begin the session by providing an overview of key recommendations from the Expert Panel Report (5-7 mins). • Joy Romero to provide perspective on attracting investment to support a cleaner oil and gas industry (5-7 mins). • Susan Golyak to provide an investment perspective on the opportunities and challenges for sustainable financing (5-7 mins). <p>Moderator to intervene and direct the discussion as needed.</p>
9:10 AM [15 mins]	Moderated Q&A	Moderated discussion with the audience. Moderator will be directed to guide the discussion with Ministers and Indigenous Leaders and then open it up more broadly to stakeholder invitees.
9:25 AM [5 mins]	NRCan provides closing remarks	NRCan will provide closing remarks and will summarize discussion and potential areas for future work.
9:30 AM	Event ends	

OPEN SESSION: WOMEN IN NATURAL RESOURCES

Tuesday, July 16, 2019 9:30 AM – 10:30 AM

Room: Pavilion

Seating: Banquet

Time	Activity	Notes
9:30 AM	Open session on Women in Natural Resources	This session immediately follows the open session on sustainable finance. It will take place in the same room.
9:30 AM	Introduction	Emcee Ryan Forman introduces Moderator Jamile Cruz.
9:30 AM [10 mins]	Opening remarks from Moderator Jamile Cruz	Moderator will deliver opening remarks and then give the floor to Lisa Langevin.
9:40 AM [5 mins]	Speaker Presentation	Lisa Langevin (Build Together) highlights actions to improve gender equality in organizations.
9:45 AM [5 mins]	Moderator Introduces Breakout Discussion	Moderator will set the stage for the breakout discussion.
9:50 AM [15 mins]	Breakout Discussion	Delegates on each table will discuss opportunities and best practices for gender equality. Organizations can highlight key initiatives and Ministers/governments can provide an overview of their jurisdiction's efforts in this space.
10:05 AM [20 mins]	Idea Sharing	Moderator to invite pre-selected organizations/governments to provide a 3-4 minute overview of a concrete action improving gender equality and diversity. <ul style="list-style-type: none"> • Minister Jonatan Julien, Province of Quebec • Lindsay Kislock, Mining Association of BC • Steve Coupland, Canadian Nuclear Association • NRCan will speak to Equal by 30.
10:25 AM [5 mins]	Moderator provides closing remarks	Moderator to provide closing remarks and will summarize discussion.
10:30 AM	Event ends	Event ends.

OPEN SESSION ON COMPETITIVENESS
COMMUNICATING CANADA'S GLOBAL ENERGY AND MINING ADVANTAGE

Tuesday, July 16, 2019 10:45 AM – 12:15 PM

Room: Pavilion

Seating: Banquet

Time	Activity	Notes
10:45 AM	Introduction	Emcee Ryan Forman introduces moderator Hunter Tura.
10:45 AM [10 mins]	Welcome from Moderator	Moderator will open the session and welcome the audience.
10:55 AM [5 mins]	Video Presentation	Joint energy/mining video will be shown.
11:00 AM [5 mins]	Introduce Guest Speakers	Moderator will introduce guest speakers and invite them to the stage.
11:05 AM [15 mins]	Lightning Talks	Speakers present their perspectives on the importance of a strong brand.
11:20 AM [45 mins]	Moderated Dialogue	Moderated dialogue with Ministers. Moderator will be directed to guide the discussion with Ministers and Indigenous Leaders.
12:05 AM [5 mins]	Introduction	Moderator invites NRCan to provide closing remarks.
12:10 PM [10 mins]	Closing remarks	NRCan will provide closing remarks and will summarize discussion and potential areas for future work.
12:15 PM	Events ends	

**LUNCH SESSION: HOW ARTIFICIAL INTELLIGENCE
CAN UNLOCK VALUE IN CANADA'S ENERGY AND MINING SECTORS**

Tuesday, July 16, 2019 12:30 PM – 1:30 PM

Room: Pavilion

Seating: Banquet

Time	Activity	Notes
12:30 PM [25 mins]	Lunch	Emcee Ryan Forman will invite participants to the buffet for lunch.
12:55 PM [2 mins]	Welcome from Emcee	Mr. Forman will introduce guest speaker.
12:57 PM [25 mins]	Guest Speaker Presentation	Presentation / Speech (PowerPoint TBC)
1:22 PM [2 mins]	Emcee Thanks Speaker	Mr. Forman will thank the speaker and introduce Yukon Minister of Energy, Mines and Resources, Ranj Pillai.
1:24 PM [5 mins]	Welcome to EMMC 2020	Emcee will invite Minister Ranj Pillai to welcome participants to EMMC 2020. A 1 minute Yukon tourism video will be shown.
1:30 PM	Event concludes	

CLOSING OF PLENARY SESSIONS

Tuesday, July 16, 2019 1:30 PM – 1:45 PM

Room: Pavilion

Seating: Banquet

Time	Activity	Notes
1:30 PM	Introduction	Ryan Forman, Executive Director, BC Ministry of Energy, Mines and Petroleum Resources and event emcee introduces Minister Sohi.
1:31 PM	Remarks (GoC)	NRCan delivers remarks (approx. 3 minutes).
1:34 PM	Introduction	Ryan Forman introduces Minister Mungall, Co-chair of EMMC 2019.
1:36 PM	Remarks (BC)	Minister Mungall delivers remarks.
1:40 PM	Event concludes	Ryan Forman thanks participants and closes the plenary sessions.
1:45 PM	Event ends	

OPTIONAL SITE VISIT TO THE ʔAQAM HEATING SYSTEM PROJECT*Tuesday, July 16, 2019 2:30 PM – 4:30 PM*

Time	Activity	Notes
2:30 PM / 3:30 PM [1 hour]	Tour departs St. Eugene Resort	<p>The tours of the Heating System Building will depart from the St. Eugene Courtyard at the front of the property at 2:30 PM and 3:30 PM.</p> <p>A tour guide with a sign labelled “Retrofit Tour” will greet you at the meeting place.</p> <p>Participants will take a short walk across the St. Eugene property to the ʔaqam First Nation Community Centre.</p>
3:30 PM / 4:30 PM	Site Visit Ends	<p>Co-hosts will return with the tour group to St. Eugene Resort to prepare for the next session, an optional Networking Reception.</p> <p>The optional Reception will take place in the Chief David Room from 4:00 PM - 5:30 PM.</p>

PRIVATE DINNER FOR MINISTERS AND DEPUTY MINISTERS*Tuesday, July 16, 2019 6:30 PM – 9:00 PM**Room: Courtyard**Seating: Long tables*

Time	Activity	Notes
6:25 PM	Arrival at Courtyard	Minister Sohi and Mungall arrive at the Courtyard and is greeted by Joe Pierre, Chief of the ʔaᑭam community.
6:30 PM	Dinner and entertainment	Dinner is served. Background music performed by Jamie Neve, local award-winning guitarist and vocalist.
7:45 PM	Dinner concludes and presentation	Dinner concludes. Minister Sohi remains seated. Chief Joe Pierre presents legends from the Ktunaxa First Nation.
9:00 PM	Event concludes	Minister Mungall, Co-chair of EMMC 2019, thanks Chief Joe Pierre and guests. Minister Sohi departs.

Page 064 of 150 to/à Page 070 of 150

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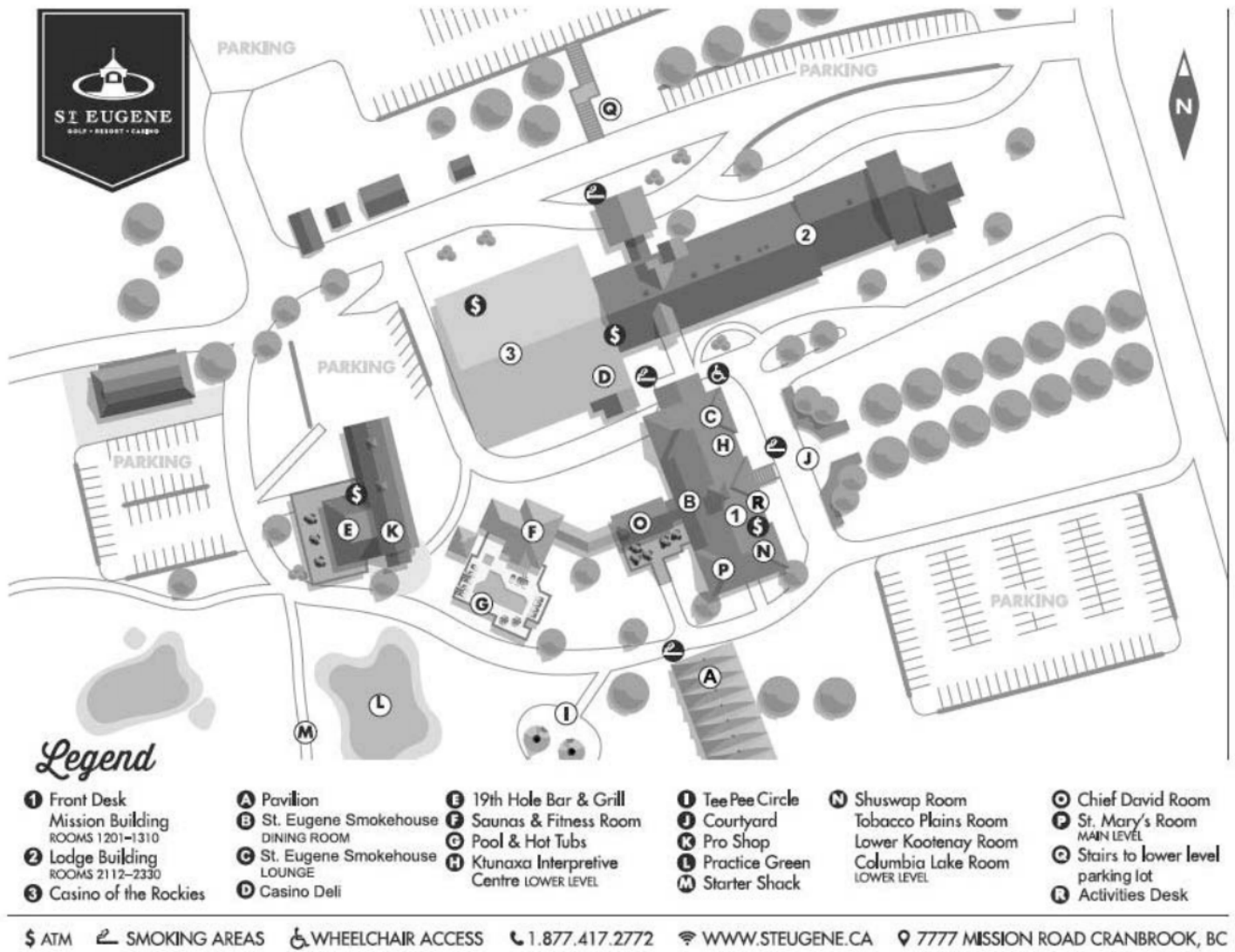
s.13; s.16

PRESS CONFERENCE*Wednesday, July 17, 2019 4:00 PM – 4:30 PM**Room: Pavilion*

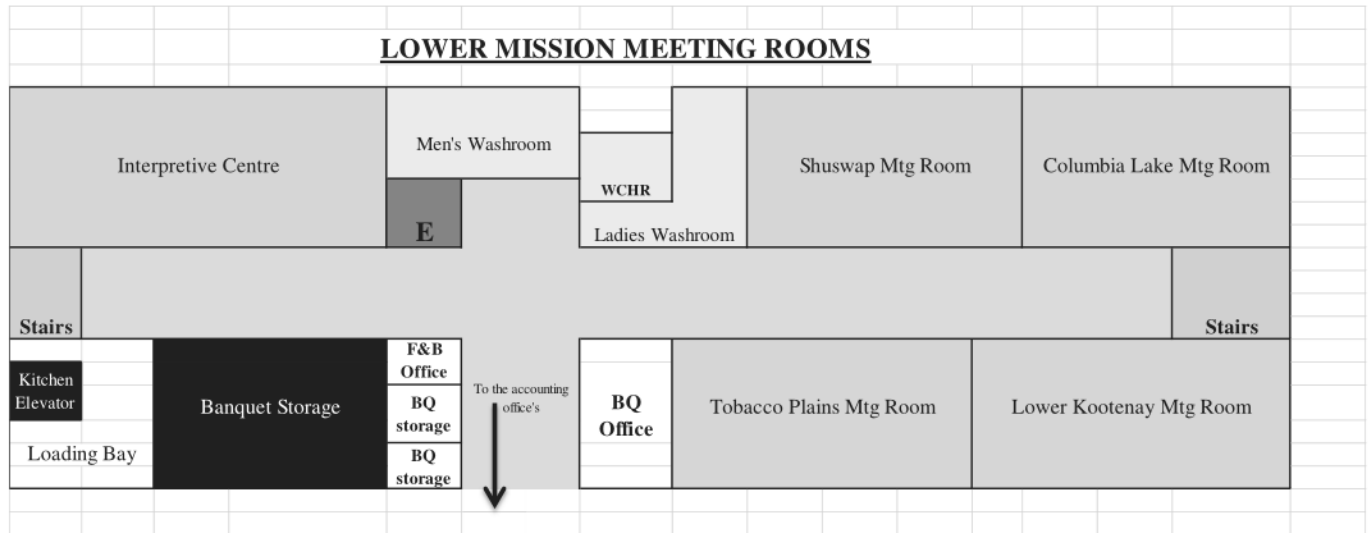
Time	Activity	Notes
4:00 PM	Arrival in St. Eugene Pavilion room	Minister Sohi arrives in the St. Eugene Pavilion room and takes his place at the podium.
4:00 PM	Welcome and remarks (BC)	Minister Mungall, Co-chair of EMMC 2019, welcomes attendees, delivers remarks and introduces Minister Sohi.
4:05 PM	Remarks (GoC)	Minister Sohi delivers remarks (approx. 3 minutes) and opens the floor to questions from the media.
4:08 PM	Q&A with media	Minister Sohi and Minister Mungall address questions from media.
4:30 PM	Event concludes	Minister Sohi departs for his next engagement.

ANNEX 5: RESORT MAPS

Map#1: St. Eugene Resort



Map #2: Lower Mission Meeting Rooms



ANNEX 6: SEATING PLANS

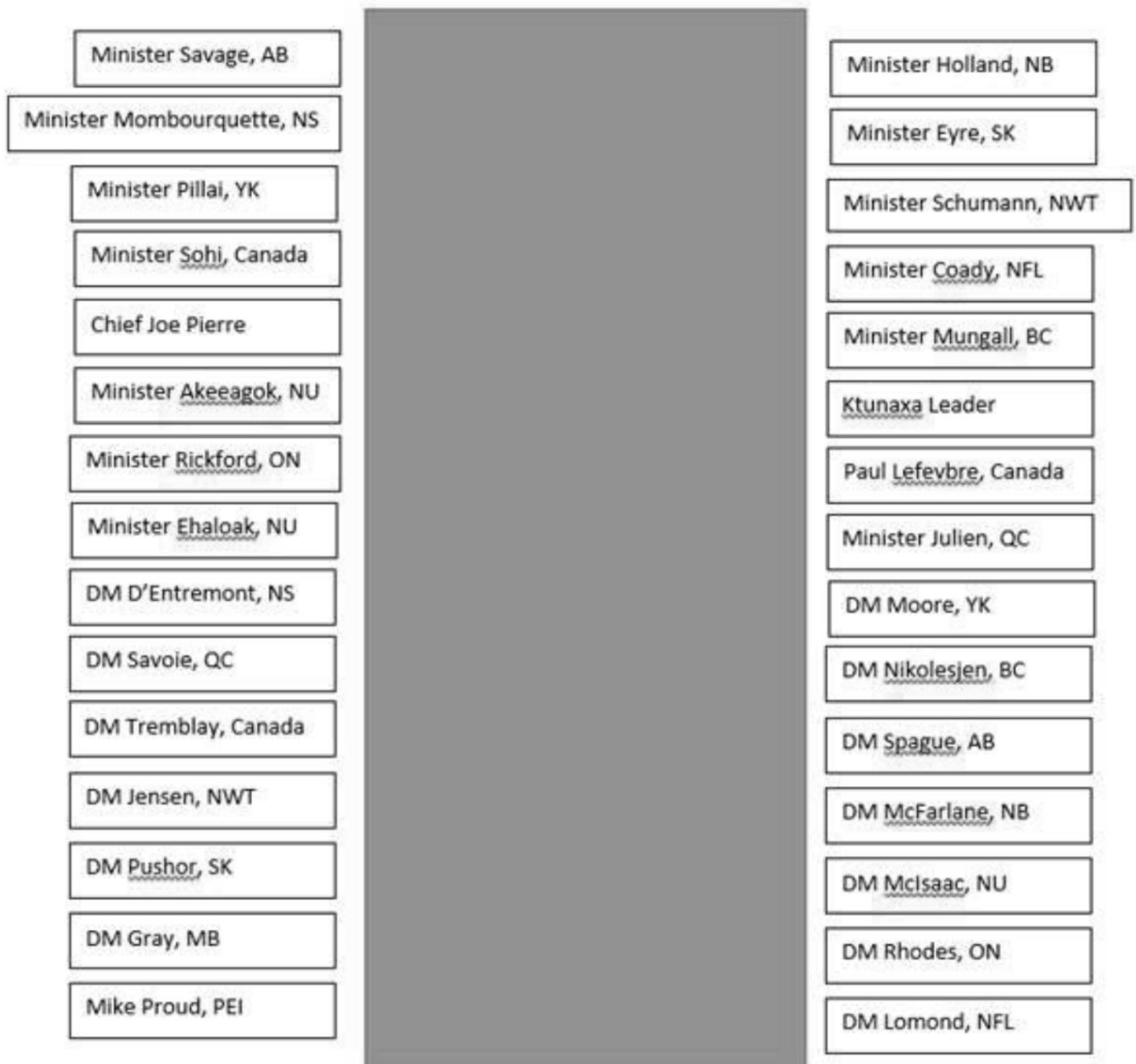
Figure 1: Open session seating plan – Day 1 (July 15)

<p><u>Head Table/ Table 1:</u> (6)</p> <p>Minister Amarjeet Sohi, Canada (Co-chair) DM Tremblay, NRCan Minister Michelle Mungall, BC (Co-chair) DM Nikolejsin, BC Ktunaxa Leader/representative ?aqam Leader/representative</p>	<p><u>Table 2:</u> (7)</p> <p>Minister Savage, AB DM Sprague, AB Minister Wally Schumann, NWT DM Jensen, NWT Minister Ranj Pillai, YK DM Moore, YK Assembly of First Nations elected representative</p>
<p><u>Table 3:</u> (6)</p> <p>Minister Bronwyn Eyre, SK DM Pushor, SK Minister Rochelle Squires, MB DM Gray, MB Mike Proud, PEI Minister Jeanie Ehaloak, NU</p>	<p><u>Table 4:</u> (7)</p> <p>Minister Coady, NL DM McIntosh, NL Minister David Akeeagok, NU DM McIsaac, NU Minister Holland, NB DM McFarlane, NB MNC elected leader</p>
<p><u>Table 5:</u> (6)</p> <p>Minister Jonathan Julien, QC DM Savoie, QC Minister Rickford, ON DM Rhodes, ON Minister Mombourquette, NS DM D'Entremont, NS</p>	

Figure2: Open session seating plan – Day 2 (July 16)

<p><u>Head Table/ Table 1:</u> (6)</p> <p>Minister Amarjeet Sohi, Canada (co-chair) DM Tremblay, NRCan Minister Michelle Mungall, BC (co-chair) DM Nikolesjen, BC Minister Ranj Pillai, YK DM Moore, YK</p>	<p><u>Table 2:</u> (6)</p> <p>Minister Savage, AB DM Sprague, AB Minister Wally Schumann, NWT DM Jensen, NWT ?aqam Leader/representative Minister Jeanie Ehaloak, NU</p>
<p><u>Table 3:</u> (6)</p> <p>Minister Bronwyn Eyre, SK DM Pushor, SK Minister Rochelle Squires, MB DM Gray, MB Assembly of First Nations elected representative Mike Proud, PEI</p>	<p><u>Table 4:</u> (7)</p> <p>Minister David Akeeagok, NU DM McIsaac, NU Minister Coady, NL DM McIntosh, NL Minister Holland, NB DM McFarlane, NB Ktunaxa Leader/representative</p>
<p><u>Table 5:</u> (7)</p> <p>Minister Rickford, ON DM Rhodes, ON Minister Jonathan Julien, QC DM Savoie, QC Minister Mombourquette, NS DM D'Entremont, NS MNC elected leader</p>	

Figure 3: Long table seating plan (July 16 at 6:30 PM)



MINISTRY OF ENERGY, MINES AND PETROLEUM RESOURCES

BRIEFING NOTE FOR INFORMATION

- I PREPARED FOR:** Honourable Michelle Mungall, Minister of Energy, Mines and Petroleum Resources
- II ISSUE:** Energy and Mines Ministers' Conference 2019 Closed Mines Session.

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Page 078 of 150 to/à Page 086 of 150

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MINISTRY OF ENERGY, MINES AND PETROLEUM RESOURCES

BRIEFING NOTE FOR INFORMATION

I PREPARED FOR: Honourable Michelle Mungall, Minister of Energy, Mines and Petroleum Resources

II ISSUE: Energy and Mines Ministers' Conference 2019 Closed Energy Session

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Page 088 of 150 to/à Page 094 of 150

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Page 095 of 150 to/à Page 096 of 150

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MINISTRY OF ENERGY, MINES AND PETROLEUM RESOURCES

BRIEFING NOTE FOR INFORMATION

I PREPARED FOR: Honourable Michelle Mungall, Minister of Energy, Mines and Petroleum Resources

II ISSUE: Energy and Mines Ministers' Conference 2019 Open Sessions formats and biographies of presenters

III BACKGROUND:

During the first two days of the EMMC, there will be four "open-sessions". These are discussions, panels, presentations and talks open to all delegates of the conference. The open sessions are as scheduled below:

Monday, July 15:

Indigenous-led Session 4:00 PM to 5:30 PM ([Annex 1](#))

Tuesday, July 16:

Sustainable Finance 8:30 AM to 9:30 AM ([Annex 2](#))

Women in Natural Resources 9:30 AM to 10:30 AM ([Annex 3](#))

Competitiveness 10:45 AM to 12:15 PM ([Annex 4](#))

Lunch 12:15-1:30 PM

Closing of Plenary Session 1:30 PM – 1:45 PM (**Minister Mungall to provide reflections on sessions.**)

IV DISCUSSION:

The Minister has no formal role during these sessions and is not a required participant. In the Annexes of this document, more detailed information on each session and the speakers can be found for reference.

Emcee Ryan Forman will request Minister Mungall provide some wrap-up comments at the end of the open sessions. Staff will provide key notes throughout the sessions.

DRAFTED BY:

Chris Fleming

APPROVED BY:

Ryan Forman, A/ADM✓

Dave Nikolejsin, DM✓

ANNEX 1 - INDIGENOUS-LED SESSION:

Time: Monday, July 15, 2019 – 4:00 PM to 5:30 PM

Participants:

- Dave Nickolejsin, Deputy Minister, Ministry of Energy, Mines and Petroleum Resources (moderator)
- Kathryn Teneese, Chair of the Ktunaxa Nation Council
- Chief Crystal Smith, Haisla Nation
- Chief Ian Campbell, Squamish Nation
- Chief Ken Cameron, Sauteau First Nations
- Corinne Mckay, Secretary Treasurer, Nisga'a Lisims Government

Description of Event:

The open session is an hour and a half panel discussion with BC Indigenous communities involved in the energy and mining sector. The goal of this session is to communicate the priorities of these communities with respect to natural resource development to the audience and foster a better understanding of the unique perspectives of Indigenous governments and organizations on meaningful Indigenous participation.

Overview of Session Topics:

- The session will be guided by several questions formulated through bilateral discussions with the participating Nations.
- Below are the draft questions, based on feedback from the participating Nations:
 1. What does the economic development associated with the development of natural resources mean for your community?
 2. What does meaningful engagement and partnerships with proponents and governments mean to you and your community?
 3. As communities that live around natural resource development, how does environmental stewardship and land use planning play a role in how you approach discussions with project proponents, government and people within your community?
 4. What social impacts and associated benefits do natural resource projects bring to your community?

Session Format:

5 minutes	Dave Nikolejsin (moderator) to introduce the session and welcome the audience. This will include an acknowledgement of Ktunaxa territory and introduce the panel participants.
40 minutes	Panel Discussions based on above questions.

10 minutes	Audience Questions – Dave will then ask for questions from the audience (microphones to be walked around)
5 minutes	Emcee thanks first panel

Biographies:

s.22

s.22

s.22

ANNEX 2 - SUSTAINABLE FINANCE

Time: Tuesday, July 16, 2019 – 8:30 AM to 9:30 AM

Participants:

- Bruce Sprague, Chief Financial Officer, NexGen Energy Ltd (moderator)
- Joy Romero, Vice President of Technology & Innovation, Canadian Natural Resources Limited
- Susan Golyak, Manager, ESG Integration, British Columbia Investment Management Corporation
- Andy Chisholm, Board of Directors, Royal Bank of Canada (via videoconference)

Description of Event:

The purpose of this session is to discuss opportunities to mobilize the financial sector to support clean growth and climate resilience. A member of the Expert Panel on Sustainable Finance will initiate a moderated discussion, followed by brief remarks from representatives of different sectors, and the finance and investment community on the importance of aligning private sector capital decisions with efforts to promote clean growth and make Canada more resilient to climate change. The moderator will guide the discussion to draw out elements for both energy and mining sectors and engage the Ministers and Indigenous Leaders in a Q&A period with the speakers before opening it up more broadly to questions/comments from stakeholders.

Session Format:

5 mins	Bruce Sprague (moderator) will open the session with a few remarks.
5 mins	Moderator will introduce guest speakers and invite them to the stage.
25 mins	Andy Chisholm will begin the session by providing an overview of key recommendations from the Expert Panel Report. Speakers will then present their perspectives and moderator will intervene to direct the discussion on the opportunities and challenges for sustainable financing.
15 mins	Moderated discussion with the audience. Moderator will be directed to guide the discussion with Ministers and Indigenous Leaders and then open it up more broadly to stakeholder invitees.

Biographies:

s.22

s.22

ANNEX 3 WOMEN IN NATURAL RESOURCES

Time: Tuesday, July 16, 2019 – 9:30 AM to 10:30 AM

Participants:

- Jamile Cruz, Inclusion and Diversity Consulting (moderator)
- Speaker: Lisa Langevin, Build Together
- Emcee: Ryan Forman, Executive Director, Strategic Initiatives Branch, Government of British Columbia

Description of Event:

The purpose of this session is to highlight the importance of organizational culture in addressing gender equality and diversity, as well as to identify concrete actions, including proven models like Build Together, Women of the Building Trades, and Equal by 30, to improve gender equality and diversity both in private and public sector organizations. This session includes a guest speaker and a breakout discussion in which tables of delegates discuss efforts in this space. Following the breakout discussion, a few delegates will be invited to share examples of concrete actions they have taken to improve organizational culture, gender equality and diversity.

Session Format:

10 mins	Jamile Cruz (moderator) will deliver opening remarks and then give the floor to Build Together.
3 mins	Gabrielle Herle (Build Together), highlight current challenges and perceptions of changes in the field
5 mins	Lisa Langevin (Build Together) highlights actions to improve gender equality in organizations
5 mins	Moderator will set the stage for the breakout discussion
15 mins	Delegates on each table will discuss opportunities and best practices for gender equality. Organizations can highlight key initiatives and Ministers/governments can provide an overview of their jurisdiction's efforts in this space.
20 mins	Moderator to invite pre-selected organizations/governments to provide a 2-4 minute overview of a concrete action improving gender equality and diversity. <ul style="list-style-type: none"> • NRCan • Quebec • Mining Industry Human Resources Council • Efficiency Canada • Mining Association of BC
5 mins	Moderator to provide closing remarks and will summarize discussion.

Biographies:

s.22

APPENDIX 4 - COMMUNICATING CANADA'S GLOBAL ENERGY AND MINING ADVANTAGE

Time: Tuesday, July 16, 2019 – 10:45 AM to 12:15 PM

Participants:

- Hunter Tura, Bruce Mau Design, Canadian design firm that engages in brand development (moderator)
- Susannah Pierce, Director External Relations, LNG Canada
- Sheila Risbud, Director Government Affairs, Teck Resources

Description of Event:

The purpose of this session is to discuss Canada's global reputation, resource advantage, communications challenges, and the long-term benefits of aligning and strengthening Canada's global messaging. This session includes a video presentation followed by "lightning talks" with companies that can speak to Canada's competitive advantage and positive impact of building a national brand. Following the presentations, a sector agnostic branding expert (Hunter Tura, Bruce Mau Design) will moderate a dialogue between Ministers and speakers.

Session Format:

5 mins	Hunter Tura (moderator) will open the session and welcome the audience.
5 mins	Joint energy/mining video will be shown.
5 mins	Moderator will introduce guest speakers and invite them to the stage.
15 mins	Speakers present their perspectives on the importance of a strong brand.
45 mins	Moderated dialogue with Ministers. Moderator will be directed to guide the discussion with Ministers and Indigenous Leaders.
5 mins	Moderator invites Minister Sohi to provide closing remarks.
10 mins	Minister Sohi will provide closing remarks and will summarize discussion and potential areas for future work.

Biographies:

s.22

MINISTRY OF ENERGY, MINES AND PETROLEUM RESOURCES

BRIEFING NOTE FOR INFORMATION

I PREPARED FOR: Honourable Michelle Mungall, Minister of Energy, Mines and Petroleum Resources

II ISSUE: Article 6 of the Paris Climate Accord

III BACKGROUND:

The Paris Climate Accord was signed by Canada and 194 other countries in December 2015, and provides a framework of commitments through which State parties will work to keep the increase in global temperatures to less than two degrees above pre-industrial levels.

Internationally Transferred Mitigation Outcomes (ITMOs) are described in Article 6, Paragraph 2 of the Paris Climate Accord with respect to cooperative approaches towards Nationally Determined Contributions (NDC). These cooperative approaches allow parties to make emission reducing investments in other jurisdictions, and to trade emission reducing products and services. It allows countries to enter voluntary agreements on what share of the reductions to NDCs achieved would “belong” to which jurisdiction.

ITMOs are a mechanism to mitigate BC GHG emissions from industrial development, by counting carbon reductions and net benefit from a global perspective.

The Paris Climate Agreement was intended to be finalized at the Conference of the Parties (COP24) in Poland in December 2018. That decision was postponed.

IV DISCUSSION:

s.13

V CONCLUSION:

s.13

DRAFTED BY:

Ryan Forman
778-698-7248

APPROVED BY:

Ryan Forman, A/ADM✓
Dave Nikolejsin, DM✓

**MINISTRY OF ENERGY, MINES AND PETROLEUM RESOURCES
BRIEFING NOTE FOR DECISION**

Date: July 16, 2019
CLIFF: 107128

PREPARED FOR: Honourable Michelle Mungall, Minister of Energy, Mines and Petroleum Resources

ISSUE: Options to address placer mining compliance and enforcement challenges in the Turnagain

BACKGROUND:

The placer industry in the Turnagain region poses a challenge to compliance and enforcement efforts of the Ministry of Energy, Mines and Petroleum Resources (EMPR) and is a contentious issue with the Tahltan Central Government (TCG).^{s.16}

s.16

Recent efforts by EMPR have led to increased rates of compliance but there continue to be operations which are challenging to bring into compliance.

DISCUSSION:

The remoteness of the Turnagain region makes compliance and enforcement activities resource intensive and demonstrates the need for close collaboration with the First Nations in monitoring and enforcement. Jade placer mining occurs primarily in an area of overlap between the TCG and Kaska First Nation. EMPR has undertaken a number of actions to increase regulatory oversight in the Turnagain region. These include workshops and site inspections with land guardians and the initiation of a Jade Boulder Road working group, which includes both TCG and Kaska First Nations, to address the existing unpermitted road.

EMPR staff have used the tools available to take enforcement actions where appropriate, including:

- *Mine Act* charges in the case of a 2015 fatality;
- A two-year suspension of a Free Miner's Certificate and recommended administrative monetary penalties for non-compliance with the *Mineral Tenure* and *Mines Acts*;

- Multiple inspection and shutdown orders.

Statutory Decision Makers are limited in their ability to make widescale changes in the region with existing tools, resourcing and the nature of jade mining. Placer jade mining employs relatively unsophisticated exploration and production techniques and can impact large, environmentally sensitive areas. s.13; s.16

s.13; s.16

RECOMMENDATION:

s.13; s.16

Approved / Not Approved



Michelle Mungall, Minister
Ministry of Energy, Mines and Petroleum Resources

August 6, 2019

Date

DRAFTED BY:

Rachel Chapman
778-572-3064
Howard Davies
250-847-7653

APPROVED BY:

Peter Wijtkamp, Director✓
Chris Trumpy, ED✓
Peter Robb, ADM✓
Dave Nikolejsin, DM✓

Page 114 of 150 to/à Page 115 of 150

Withheld pursuant to/removed as

s.16

MINISTRY OF ENERGY, MINES AND PETROLEUM RESOURCES

BRIEFING NOTE FOR DECISION

PREPARED FOR: Honourable Michelle Mungall, Minister of Energy, Mines and Petroleum Resources

ISSUE: Approval to consult on amendments to the Energy Efficiency Standards Regulation (Amendment 7)

BACKGROUND:

The Ministry of Energy, Mines and Petroleum Resources (the Ministry) is responsible for the British Columbia (BC) *Energy Efficiency Act* (EEA). The Energy Efficiency Standards Regulation (EESR) lists the energy efficiency requirements for products under the EEA.

The EESR sets standards for devices that use, control, or affect the use of energy such as windows, appliances, space heaters, water heaters, lighting and some industrial equipment. The Ministry consults stakeholders on proposals for new standards and updates to existing standards on a regular basis. There have been six major amendments to the EESR since 2006.

The Ministry is proposing new and updated standards for residential windows, residential and commercial gas boilers, and computers and monitors. The package also includes regulatory upkeep changes for general service lighting and commercial fenestration standards.

The proposed amendment delivers on commitments in CleanBC to make every building more efficient by increasing efficiency standards (2.2 Improving Where We Live and Work), and the Ministry's 2019/20-2021/22 Service Plan to implement standards to advance energy efficiency in the built environment (Objective 1.1. Decarbonize BC's energy sectors and usage). The standards also support the Energy and Mines Ministers' Conference Market Transformation Roadmap for Energy Efficient Equipment in the Building Sector (EMMC Roadmap).

By 2030, the proposed standards will result in 1.8 million gigajoules per year (GJ/yr) of energy savings (electricity and fuel), or the energy requirement of 16,600 homes in BC, helping families and businesses save more than \$45 million on annual energy bills. The standards have a net economic benefit of \$130 million at the provincial level. Together, the standards will reduce greenhouse gas (GHG) emissions by more than 55,000 tonnes per year by 2030, or the equivalent of taking 14,000 light-duty vehicles off the road.

DISCUSSION:

Residential Windows:

The proposed update will require residential windows to be U-value ≤ 1.61 , an incremental improvement over the current minimum standard of U-value 1.80 (U-value is a measure of heat transmission through a building component). This update delivers on the CleanBC commitment for new residential window energy efficiency standards and aligns with targeted energy performance improvements in the EMMC Roadmap.

Most manufacturers will not need to change their fixed, picture and hinged window selections to meet the proposed standard. Some dual panel sliding windows meet the proposed regulation, but many do not. The standard will require manufacturers with non-compliant products to upgrade glass coatings, change from sliding to hinged designs or upgrade frame design. Homeowners will not notice any change in the regulated product's appearance or function, except where hinged windows are selected in place of sliders.

The provincial market share of compliant products is estimated at 40% currently and growing, driven in part by incentive programs and stringent minimum requirements in the City of Vancouver (U-value ≤ 1.40). Since 2018, The CleanBC Better Homes and BC Hydro Home Renovation Rebate programs have provided incentives to homeowners for high performance windows (U-value ≤ 1.40). Since 2017, The High Performance Window Certification Program has provided incentives to BC manufactures to develop new designs and manufacturing processes for high performance windows (U-value ≤ 1.10). Most window dealers in BC have access to multiple compliant products.

The effective date of the proposed standard is January 1, 2022. By 2030, the standard will save British Columbians 50 gigawatt hours per year (GWh/yr) of electricity and 240,000 GJ/yr of fuel, resulting in \$12 million of energy bill savings. The standard will reduce provincial GHG emissions by 12,400 tonnes per year and have a net economic benefit of \$40 million at the provincial level. See Appendix A for the detailed Residential Windows Regulatory Impact Statement.

Residential Gas Boilers:

The proposed new standard will require residential boilers to be $\geq 90\%$ efficient, harmonizing with energy performance requirements in the Building Code and recent amendments to the federal Energy Efficiency Regulations (effective July 1, 2023). The EESR does not regulate residential boilers currently. This proposal delivers on the CleanBC commitment for new space heating energy efficiency standards and aligns with targeted energy performance improvements in the EMMC Roadmap.

The proposed standard requires condensing boilers, which are widely available and well known to most installers. BC has three residential boiler manufacturers, all of whom sell products that are compliant with the proposed standard.

The market share of compliant products is mature, with national data showing that 67% of residential boiler shipments meet the proposed standard. Since 2014, the Fortis boiler program has provided incentives for residential boilers that are $\geq 90\%$ efficient.

The effective date of the proposed standard is January 1, 2022. By 2030, the standard will save British Columbians 133,000 GJ/yr of fuel, resulting in \$1.5 million of energy bill savings, and will reduce GHG emissions by 6,600 tonnes per year. The standard will have a net economic benefit of \$7 million at the provincial level. See Appendix B for the detailed Residential Boiler Regulatory Impact Statement.

Commercial Gas Boilers:

The proposed update will require that commercial boilers be $\geq 90\%$ efficient, harmonizing with recent amendments to the federal Energy Efficiency Regulations

(effective January 1, 2025). This proposal delivers on the CleanBC commitment for new space heating energy efficiency standards and aligns with targeted energy performance improvements in the EMMC Roadmap.

The proposed standard requires condensing boilers, which are widely available and well known to installers. BC has four commercial boiler manufacturers, three of whom manufacture compliant products.

The market share of compliant products is mature, with national data showing that 60% of commercial boiler shipments meet the proposed standard. Since 2014, the Fortis commercial boiler program has provided incentives for boilers that are $\geq 90\%$ efficient.

The effective date of the proposed standard is January 1, 2022. By 2030, the standard will save British Columbians 730,000 GJ/yr of fuel, resulting in \$7 million of energy bill savings, and will reduce GHG emissions by 36,500 tonnes per year. The standard will have a net economic benefit of \$20 million at the provincial level. See Appendix C for the detailed Commercial Gas Boiler Regulatory Impact Statement.

Computers and Monitors:

The proposed new standard includes requirements for computers to improve efficiency while in idle-mode and computer monitors to improve efficiency in on-mode. Regulated product types include desktop computers, laptop computers, small-scale servers and workstations. The standard harmonizes with state requirements in California (effective January 1, 2019) and Washington (effective January 1, 2021), and is a Pacific Coast Collaborative priority. The standard will not create a significant change in the performance, interface or use of regulated products.

Manufacturers have developed a full spectrum of products to serve the California market. As of April 2019, the California Energy Commission's certified product directory showed 4,000 certified product families representing 45 manufacturing companies. The six major brands that represent 80% of the international market are all represented. BC is expected to have comparable product availability as California given west coast supply chains.

The effective date for the proposed regulation is July 1, 2020. By 2030 the proposed standard will save British Columbians 150 GWh/yr of electricity, resulting in \$25 million of energy bill savings. The standard will have a net economic benefit of \$60 million at the provincial level. See Appendix D for the detailed Computers and Monitors Regulatory Impact Statement.

Regulatory Upkeep

General Service LED and Small Diameter Directional Lamps

The proposed update will exempt screw-based light emitting diode (LED) lamps and small diameter directional LED lamps from efficacy, colour rendering index and rated life requirements in the current regulation, effective January 1, 2020. These requirements are no longer needed given LED lamp technology improvements. The changes will minimize unnecessary regulatory burden for industry. See Appendix E for the detailed Regulatory Impact Statement.

Commercial Fenestration

The proposed update will allow for commercial glazing to be listed on a certified product directory or verified by a designated tester. The update will also provide an exemption for commercial fenestration installed in buildings built to the Energy Step Code. As this is a minor update, a Regulatory Impact Statement has not been prepared. Industry will be engaged via a Ministry-issued bulletin.

OPTIONS:

Option 1: Approve Ministry staff to consult on all proposals for Amendment 7

s.13

s.13

RECOMMENDATION:

Option 1: Approve Ministry staff to consult on all proposals for Amendment 7

Approved / Not Approved



Michelle Mungall, Minister
Minister of Energy, Mines and Petroleum Resources

DRAFTED BY:

Cameron Shook, Senior Standards
Engineer, EEB
778 698-8306

APPROVED BY:

Katherine Muncaster, A/Di.
Nat Gosman, A/Exec Dir ✓
Les MacLaren, ADM and A/DM ✓

Attachments

Appendix A: Residential Window Regulatory Impact Statement
Appendix B: Residential Gas Boiler Regulatory Impact Statement
Appendix C: Commercial Gas Boiler Regulatory Impact Statement
Appendix D: Computer and Monitor Regulatory Impact Statement
Appendix E: General Service LED and Small Diameter Directional Lamp Regulatory Impact Statement

Appendix A
Residential Windows Regulatory Impact Statement
REGULATORY PROPOSAL

PREPARED BY:
ENERGY EFFICIENCY BRANCH,
B.C. MINISTRY OF ENERGY, MINES AND PETROLEUM RESOURCES
JULY 2019

COMMENTS MUST BE RECEIVED BY [OCTOBER 4], 2019

Contents:

<i>Scope and Requirements.....</i>	<i>2</i>
<i>Assessment from an Industry Perspective</i>	<i>4</i>
<i>Assessment from a Consumer Perspective</i>	<i>5</i>
<i>Assessment from a Provincial Government Perspective</i>	<i>6</i>
<i>Notes</i>	<i>6</i>

SCOPE AND REQUIREMENTS

TYPE OF DEVICE	<p>Residential Windows and Sliding Glass Doors means metal and non-metal framed manufactured windows and sliding glass doors for residential buildings with less than five stories, and non-residential buildings with a floor space of 600m² or less.</p> <p>Residential windows and sliding glass doors do not include hinged doors, bi-folding doors, sidelites, transoms, skylights, sloped glazing, roof windows, curtain walls, window walls or storefront windows.</p>
TEST STANDARD	<p>The procedure set out in one of the following:</p> <ul style="list-style-type: none"> (a) CAN/CSA A440.2-14/A440.3-14; (b) CAN/CSA A440.2-18/A440.3-18; (c) NFRC 100-14; or (d) NFRC 100-17.
PROPOSED ENERGY PERFORMANCE STANDARD	U-value must be $\leq 1.61 \text{ W/(m}^2\text{-K)}$
EFFECTIVE DATE	Products manufactured and sold after January 1, 2022.
CERTIFICATION	<p>Compliance with the regulation requires testing and verification by a Standards Council of Canada accredited Certification Body.</p> <p>The existing labelling requirements for manufactured fenestration products will not change. The existing labelling requirements include an energy efficiency verification label as well as an additional removable label requirement. The labelling requirement aligns with that of recognized North American fenestration certification programs.</p>
CURRENT STANDARD	<p>The B.C. Energy Efficiency Standards Regulation requires residential windows and sliding glass doors to have a U-Value equal to or less than 1.80 W/m²K. Products must be tested with CAN-CSA A440.2-14/A440.3-14 or NFRC 100-2014. Compliant products must have an energy efficiency verification label from a Standards Council of Canada accredited certification body or a National Fenestration Rating Council accredited independent certification and inspection agency.</p>
HARMONIZATION	<p>B.C.'s proposed regulation is aligned with the objectives of the Market Transformation Roadmap endorsed by the Energy and Mines Ministers in 2018. ^[1] The Roadmap includes a short-term goal that all windows installed in Canada meet a U-value ≤ 1.61 by 2022. The City of Vancouver (which represents ~17% of B.C.'s population) has had a residential window requirement of U-value ≤ 1.4 since January 1, 2015.</p>

^[1] https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/emmc/pdf/Market-Transformation-Strategies_en.pdf

NEED FOR REGULATION	<p>This standard will:</p> <ul style="list-style-type: none"> • Achieve CleanBC commitments to reduce greenhouse gas (GHG) emissions through new energy efficiency standards for space heaters, water heaters and residential windows (2.2 Improving Where We Live and Work); • Reduce net heating costs for B.C. residents; and • Drive the adoption of the latest window manufacturing technologies.
TRANSPARENT REGULATION DEVELOPMENT	<p>Development of the proposed residential window standard proceeded as follows:</p> <ul style="list-style-type: none"> • Review of provincial climate and energy plans; • Market, economic and technical analysis; and • Development of a regulatory proposal. <p>Public review and stakeholder consultation will be open for [45-days] after the publication of this document. Stakeholder consultation will be followed by regulatory drafting and submission of the regulatory proposal to Cabinet for approval.</p>
ACCEPTANCE	<p>Compliant products ($U\text{-value} \leq 1.61$) use the same technologies as the current regulated minimum performance products ($U\text{-value} \leq 1.80$) which include:</p> <ul style="list-style-type: none"> • Vinyl, wood or fibreglass frame; and • Dual pane insulating glass unit (IGU) with argon gas fill and one low emissivity (Low-E) coated surface. <p>Most manufacturers will not need to change their fixed, picture and hinged window selections to meet the proposed standard. Some dual panel, single Low-E surface sliding windows meet the proposed regulation, but many do not. The standard will require manufacturers with non-compliant products to upgrade glass coatings, change from sliding to hinged designs, or upgrade frame design.</p> <p>Homeowners will not notice any change in the product's appearance or function, except where hinged windows are selected in place of sliders.</p>
MARKET TRANSFORMATION	<p>The performance of residential windows continues to improve. The use of sealed IGUs, dual panes, low-E coatings, argon gas, and non-metal frames has increased the performance of windows by 30-40% over the last 30 years. Further improvements in low-E coatings, deeper multi-chambered frame design and warm-edge spacers allow products to meet the proposed performance criteria of $U\text{-value} \leq 1.61$.</p> <p>Market transformation has been facilitated by labelling programs and requirements, incentive programs, and the adoption of progressively more stringent codes and standards.</p> <p>Energy performance labelling has helped consumers identify and choose high-performance windows. Energy performance labelling is facilitated by the Energy Efficiency Standards Regulation (which requires labelling of all windows), the voluntary ENERGY STAR program, and the City of Vancouver's Building Bylaw (which strictly enforces labelling requirements).</p> <p>Rebate programs have helped to drive market awareness and demand for high-efficiency products. Rebates for high-efficiency windows were provided by LiveSmart (2008-2014) and more recently by the CleanBC Better Homes program and Home Renovation Rebate program (2018-present).</p>

	<p>Since 2017, the High Performance Window Certification Program has provided financial support to B.C. manufacturers to test and certify new Passive House and ENERGY STAR Most Efficient window products. Passive House and Energy Star Most Efficient products perform significantly better than the proposed regulation. The technology used in ultra-efficient Passive House and Energy Star Most Efficient products has informed the development of mid-efficiency product lines that meet the proposed standard.</p> <p>Incremental updates to the Energy Efficiency Standards Regulation, the BC Building Code and the City of Vancouver Building Bylaw have driven market adoption of high-efficiency windows over time. Most recently, the City of Vancouver's U-value ≤ 1.4 requirement and the adoption of the B.C. Energy Step Code are driving technology advancement and market adoption of products meeting the proposed standard.</p>
AVAILABILITY	The market share of compliant products is estimated at 40%. Most window dealers in B.C. have access to multiple compliant products.

ASSESSMENT FROM AN INDUSTRY PERSPECTIVE

ACCESSIBILITY	<p>Builders and window installers have access to compliant products across the Province. Compliant products are sold through all major distribution channels. Compliant products are compatible with new construction and renovation projects in all major residential building types.</p>
MANUFACTURER PERSPECTIVE	<p>The proposed standard will require some manufacturers to adjust their product offerings and/or design and certify new products. Manufacturers will have two years prior to the proposed effective date to make these changes.</p> <p>Common upgrades from a non-compliant window will be to introduce a second low-E coating or switch from a slider to a casement window. These options are included in most manufacturers' existing product certifications and manufacturing capabilities.</p> <p>Some manufacturers will design and certify new product lines using more thermally efficient frame profiles. Engineering resources for designing new products can be supplied by window system suppliers (i.e. frame profile suppliers) or by experienced fenestration thermal modellers.</p>
IMPACT ON BUILDERS	<p>Residential home builders typically specify slider windows and purchase the lowest cost products meeting building code requirements.</p> <p>The proposed standard will require residential builders to adapt their specifications. Residential builders will need to re-evaluate window selection based on updated cost parameters. Slider windows will not always be the lowest cost option under the standard. This shift is already being prompted by the BC Step Code which, in jurisdictions that have adopted it, requires builders to carefully consider window design.</p>
OTHER ISSUES	<p>Some manufacturers and builders are concerned about being undercut by non-compliant products. Industry associations advocate for consistent enforcement of standards to ensure a level playing field for compliant manufacturers.</p>

ASSESSMENT FROM A CONSUMER PERSPECTIVE

COST-BENEFIT ASSUMPTIONS	<p>A cost-benefit analysis was completed for single-family dwellings. The cost-benefit analysis weighs the incremental costs against the energy cost savings discounted over the equipment lifetime. The consumer cost-benefit analysis is a weighted average of natural gas furnace, electric resistance heating and oil furnace space heating types. Cost-benefit assumptions include:</p> <ul style="list-style-type: none">• A natural gas cost that includes all variable costs including delivery charges, commodity charges, carbon tax, sales tax and the clean energy levy. The total cost of gas supply was estimated at \$9.90/GJ in 2020, with moderate increases in subsequent years.• A BC Hydro electrical rate that includes 66% of bills charged at Tier 2, using forecasted rate increases between 2022 and 2040. Electrical rates include all applicable taxes and the rate rider.• The 2018 average spot price of heating oil was used for years between 2022 and 2040.• A consumer discount rate of 6%.• An incremental cost of \$500 per home package of windows that represents the average additional cost for a compliant package once the regulation takes effect.• A product lifetime of 20 years. <p>Energy savings were modelled in HOT2000 v11.4 for the representative climates of Vancouver, Kamloops, and Prince George.</p>																									
COST-BENEFIT ANALYSIS ENERGY SAVINGS FOR EACH CONSUMER	<p>The following tables show the cost-benefit analysis for the purchase of a home package of windows compliant to the proposed regulation versus the current minimum energy performance standard.</p> <table><tr><th colspan="5">Consumer Cost-Benefit Analysis per home</th></tr><tr><th>Region</th><th>Net Present Value</th><th>Annual GHG Reductions (kg CO2e/yr)</th><th>First-year cost savings</th><th>Simple Payback</th></tr><tr><td>Lower Mainland & Van. Isl.</td><td>\$240</td><td>60</td><td>\$50</td><td>13</td></tr><tr><td>Southern Interior</td><td>\$290</td><td>80</td><td>\$55</td><td>12</td></tr><tr><td>North</td><td>\$560</td><td>140</td><td>\$75</td><td>9</td></tr></table>	Consumer Cost-Benefit Analysis per home					Region	Net Present Value	Annual GHG Reductions (kg CO2e/yr)	First-year cost savings	Simple Payback	Lower Mainland & Van. Isl.	\$240	60	\$50	13	Southern Interior	\$290	80	\$55	12	North	\$560	140	\$75	9
Consumer Cost-Benefit Analysis per home																										
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North	\$560	140	\$75	9																						
NON-ENERGY BENEFITS	<p>Compliant window technology can also reduce drafts, condensation and outside noise levels.</p>																									

ASSESSMENT FROM A PROVINCIAL GOVERNMENT PERSPECTIVE

ECONOMIC ASSESSMENT FROM A PROVINCIAL PERSPECTIVE <i>(Aggregate energy, emission, and net cost savings)</i>	<p>A cost-benefit analysis was completed for the Province as a whole. The cost-benefit to the Province is represented by the net present value of window sales affected by the proposed regulation between 2022 and 2030. The Provincial cost-benefit assumptions include:</p> <ul style="list-style-type: none"> • All assumptions made in the consumer cost-benefit analysis. • A window sales forecast developed based on historical housing starts, a replacement ratio of 3% per year and a typical house package consisting of 28 windows with an average size of 1.1m². <table border="1" data-bbox="427 646 1453 951"> <thead> <tr> <th colspan="2">Provincial Cost-Benefit Analysis¹</th></tr> </thead> <tbody> <tr> <td>Aggregated Annual Gas and Oil Savings</td><td>240,000 GJ in 2030</td></tr> <tr> <td>Aggregate Annual GHG Reductions</td><td>12,400 tonnes CO₂e in 2030</td></tr> <tr> <td>Aggregated Annual Electrical Savings</td><td>50 GWh/yr in 2030</td></tr> <tr> <td>Provincial NPV by 2030</td><td>\$40 Million</td></tr> </tbody> </table>	Provincial Cost-Benefit Analysis ¹		Aggregated Annual Gas and Oil Savings	240,000 GJ in 2030	Aggregate Annual GHG Reductions	12,400 tonnes CO ₂ e in 2030	Aggregated Annual Electrical Savings	50 GWh/yr in 2030	Provincial NPV by 2030	\$40 Million
Provincial Cost-Benefit Analysis ¹											
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Provincial NPV by 2030	\$40 Million										
ADMINISTRATIVE FEASIBILITY FOR COMPLIANCE AND ENFORCEMENT	<p>Compliance and enforcement approach under the <i>Energy Efficiency Act</i> is based on random inspections and response to compliance complaints. Enforcement will be based on provincially regulated labelling and the certified product directories of designated testers.</p>										

NOTES

REGULATORY ASSESSMENT COMPLETED BY	Cameron Shook, P.Eng Energy Efficiency Standards Engineer, Energy Efficiency Branch Tel: (778) 698-8306 E-mail: cameron.shook@gov.bc.ca
DATE	July 25, 2019

¹ Aggregated annual values account for the savings/reductions that occur in 2030 from all units installed since the implementation of the standard up to the year specified.

Appendix B
Residential Gas Boilers Regulatory Impact Statement
REGULATORY PROPOSAL

PREPARED BY:
ENERGY EFFICIENCY BRANCH,
B.C. MINISTRY OF ENERGY, MINES AND PETROLEUM RESOURCES
JULY 2019

COMMENTS MUST BE RECEIVED BY [OCTOBER 4], 2019

Contents:

<i>Scope and Requirements.....</i>	<i>2</i>
<i>Assessment from an Industry Perspective</i>	<i>3</i>
<i>Assessment from a Consumer Perspective</i>	<i>4</i>
<i>Assessment from a Provincial Government Perspective.....</i>	<i>5</i>
<i>Notes</i>	<i>6</i>

SCOPE AND REQUIREMENTS

TYPE OF DEVICE	Residential Gas Boiler means a boiler that uses propane or natural gas, is intended for application in a hot water (hydronic) central heating system and has an input rate of less than 88 kW (300,000 Btu/h). A residential gas boiler may or may not service a domestic hot water system in addition to a space heating system.
TEST STANDARD	CSA P.2-13 – Testing method for measuring the annual fuel utilization efficiency of residential gas-fired or oil-fired furnaces and boilers
PROPOSED ENERGY PERFORMANCE STANDARD	Annual fuel utilization efficiency (AFUE) \geq 90%
EFFECTIVE DATE	Products manufactured and sold after January 1, 2022.
CERTIFICATION	Compliance with the proposed regulation is based on adherence of manufactured products with the proposed energy performance standard using the proposed test standard. Testing and verification must be by a Standards Council of Canada-accredited Certification Organization. Products must be labelled with an energy efficiency verification mark showing the trademark or logo of the certification body.
CURRENT STANDARD	Currently, the B.C. Energy Efficiency Standards Regulation does not have a standard for residential boilers.
HARMONIZATION	<p>The proposed standard harmonizes with the BC Building Code. Currently, all residential gas boilers installed in new construction, in alterations or in additions are subject to the BC Building Code's requirement of AFUE \geq 90%.</p> <p>The proposed standard harmonizes with recent amendments to the federal Energy Efficiency Regulations requiring that residential gas boilers manufactured on or after July 1, 2023 must be AFUE \geq 90%. The federal standard requires energy efficiency verification and labeling. This standard applies to all boilers shipped into B.C., but not to boilers manufactured and then purchased within the province.</p>
NEED FOR REGULATION	<p>This standard will:</p> <ul style="list-style-type: none"> • Create a harmonized and enforceable regulation for boilers manufactured in B.C. or shipped into B.C.; • Reduce net heating costs for B.C. residents; and • Achieve CleanBC commitments to reduce greenhouse gas (GHG) emissions through new energy efficiency standards for space heaters, water heaters and residential windows (2.2 Improving Where We Live and Work).

TRANSPARENT REGULATION DEVELOPMENT	<p>Development of the proposed residential gas boiler standard proceeded as follows:</p> <ul style="list-style-type: none"> • Review of provincial climate and energy plans; • Market, economic and technical analysis; and • Development of a regulatory proposal. <p>Public review and stakeholder consultation will be open for [45-days] after the publication of this document. Stakeholder consultation will be followed by regulatory drafting and submission of the regulatory proposal to Cabinet for approval.</p>
ACCEPTANCE	<p>The proposed performance level requires condensing technology and typically incorporates modulating technology and a mechanical draft. While this technology is widely available and well known to most installers, it is a change from single stage, non-condensing natural draft boilers. The two technologies have different venting requirements, materials of construction, and operating schemes.</p> <p>Market acceptance is high as reflected by national shipping data that indicates 67% of residential gas hot water boiler shipments from 2015-2017 were condensing.</p>
MARKET TRANSFORMATION	<p>Market transformation programs for residential gas boilers have been operating since 2008. These include both the ENERGY STAR program and the FortisBC boiler replacement program. Since 2014, both programs have been promoting condensing boilers with an AFUE equal to or greater than 90%.</p>
AVAILABILITY	<p>The high-efficiency residential gas boiler market is well established with most manufacturers providing models with performance ranging from 90% to 97% AFUE. Currently, 52% of product models available in Canada meet the proposed standard.</p>

ASSESSMENT FROM AN INDUSTRY PERSPECTIVE

ACCESSIBILITY	<p>Products meeting the proposed standard are available from approximately 75% of manufacturers serving the Canadian market.</p>
MANUFACTURER PERSPECTIVE	<p>There are three residential gas boiler manufacturers with operations in B.C. All three manufacturers sell products compliant to the proposed standard to provincial and national markets. Two of these manufacturers only sell products that are compliant with the proposed regulation. One company also sells products that are not compliant with the proposed regulation. Manufacturers can continue to produce non-compliant boilers for export.</p>
IMPACT ON BUILDERS	<p>The proposed standard will have minimal impact on builders. The BC Building Code, which covers new construction, additions, and alterations, already requires these products. Builders will benefit from harmonization of the standard, as there is less chance of being under-bid by a non-compliant design.</p>
OTHER ISSUES	<p>The more complex technology and the higher initial cost of condensing boilers will result in higher expectations of contractor professionalism and service quality. Un-trained installers may lose market share to more professional companies.</p>

ASSESSMENT FROM A CONSUMER PERSPECTIVE

COST-BENEFIT ASSUMPTIONS	<p>A cost-benefit analysis was completed for representative single-family dwellings in the lower mainland, southern interior, and the north. The cost-benefit analysis weighs the incremental purchase and maintenance costs against the energy cost savings discounted over the equipment lifetime. Net Present Value (NPV) is used to represent the positive or negative economic impact of the proposed standard on each consumer.</p> <p>Cost-benefit assumptions include:</p> <ul style="list-style-type: none"> • A natural gas cost that includes all variable costs including delivery charges, commodity charges, carbon tax, sales tax and the clean energy levy. The total cost of gas supply was estimated at \$9.90/GJ in 2020, with moderate increases in subsequent years. • A consumer discount rate of 6%. • Analysis of various product sizes, efficiency levels, and product types (conventional and combi boilers). • Incremental costs derived from the US Department of Energy (DOE) 2015 Final Rule for Residential Boilers¹ and converted for inflation and currency. • A product lifetime of 26.5 years (derived from the US DOE 2015 Final Rule). • Energy savings modelled in HOT2000 v11.4 for the representative climates of Vancouver, Kamloops and Prince George. <p>The average incremental installed cost for a 90% AFUE boiler compared to a baseline 82% AFUE boiler is \$1,000-\$1,350. Most of this cost is the higher purchase cost of the condensing boiler. The total incremental cost is approximately 14% of total installed costs.</p> <p>The average installation cost includes the average cost to install a new condensate drain. A small subset of homes will require more extensive condensate systems (new electrical connections, long pipe runs, pumps, neutralizers, and wall penetrations, etc.). The additional cost for an extensive condensate drain retrofit is \$500-650.</p> <p>The average installation cost includes the average cost to install new combustion air and fuel gas vents. The incremental cost of installing new vents is offset by a reduction of costs for chimney relining and resizing of natural draft vents.</p>
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¹ EERE-2012-BT-STD-0047 Energy Conservation Program: Energy Conservation Standards for Residential Boilers; Final Rule

COST-BENEFIT ANALYSIS ENERGY SAVINGS FOR EACH CONSUMER	<p>The average impact on consumers is shown below.</p> <table border="1" data-bbox="451 247 1468 613"> <thead> <tr> <th colspan="2">Average Consumer Cost-Benefit Analysis</th></tr> </thead> <tbody> <tr> <td>Incremental installed cost</td><td>\$1,050</td></tr> <tr> <td>Annual energy savings</td><td>15 GJ</td></tr> <tr> <td>Annual GHG reductions</td><td>770 kg CO₂e</td></tr> <tr> <td>Simple payback per unit</td><td>7 years</td></tr> <tr> <td>NPV</td><td>\$1,060</td></tr> </tbody> </table> <p>The cost-benefit results vary for each climate region, depending on the capacity of the boiler required and the length of the heating season. The NPV for a mid-size home in Vancouver is \$900 whereas the NPV for the same sized home in Prince George is almost \$3,000. Likewise, the cost-benefit is different when comparing the proposed standard to an 82% boiler (the federal minimum efficiency) or 85% boiler (a commonly purchased efficiency level). When using an 85% boiler as the baseline, the NPV for a mid-sized Vancouver home is \$600. The NPV was positive for all modelled scenarios.</p>	Average Consumer Cost-Benefit Analysis		Incremental installed cost	\$1,050	Annual energy savings	15 GJ	Annual GHG reductions	770 kg CO ₂ e	Simple payback per unit	7 years	NPV	\$1,060
Average Consumer Cost-Benefit Analysis													
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Simple payback per unit	7 years												
NPV	\$1,060												
NON-ENERGY IMPACTS	<p>The proposed standard will reduce GHG emissions associated with residential space heating, helping consumers reduce their environmental footprint.</p> <p>Condensing boilers also reduce air pollution associated with the combustion of fossil fuels and minimize the risk of indoor combustion spillage. Condensing boilers that use modulating technology improve household comfort by creating more consistent indoor temperatures.</p> <p>The proposed standard will require some occupants to change their thermostat control habits. While it may seem counter-intuitive, some occupants will need to minimize the depth of their nighttime thermostat setback to achieve optimal efficiency and comfort.</p>												

ASSESSMENT FROM A PROVINCIAL GOVERNMENT PERSPECTIVE

ECONOMIC ASSESSMENT FROM A PROVINCIAL PERSPECTIVE <i>(Aggregate energy, emission, and net cost savings)</i>	<p>A cost-benefit analysis was completed to determine the impact of the proposed standard on the Province. The cost-benefit analysis is represented by the NPV of boiler installations that are affected by the proposed standard between 2022 and 2030. The Provincial cost-benefit assumptions include:</p> <ul style="list-style-type: none"> All assumptions made in the consumer cost-benefit analysis. The percent of shipments that already meet the proposed standard were excluded from the cost-benefit analysis. The average cost and efficiency of non-compliant products was derived from shipment data and based on two benchmarks: (1) the federal minimum energy performance standard (82% AFUE); and (2) the average efficiency benchmark (85% AFUE).
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	<ul style="list-style-type: none"> A forecast of future shipments affected by the standard was based on the replacement rate of B.C.'s installed stock. The estimate of B.C.'s installed stock is based on historical percentages of gas equipment and hot water space heating systems in B.C. homes and the equipment's life expectancy, as well as the projected population growth. The installed stock estimated was cross-referenced against Canadian boiler shipment data. <p>The Province-wide cost-benefit results are shown below.</p> <table border="1"> <thead> <tr> <th colspan="2">Provincial Cost-Benefit Analysis²</th></tr> </thead> <tbody> <tr> <td>Aggregated Annual Energy Savings</td><td>133,000 GJ in 2030</td></tr> <tr> <td>Aggregated Annual GHG Reductions</td><td>6,600 tonnes CO₂e in 2030</td></tr> <tr> <td>Provincial NPV</td><td>\$7 Million by 2030</td></tr> </tbody> </table>	Provincial Cost-Benefit Analysis ²		Aggregated Annual Energy Savings	133,000 GJ in 2030	Aggregated Annual GHG Reductions	6,600 tonnes CO ₂ e in 2030	Provincial NPV	\$7 Million by 2030
Provincial Cost-Benefit Analysis ²									
Aggregated Annual Energy Savings	133,000 GJ in 2030								
Aggregated Annual GHG Reductions	6,600 tonnes CO ₂ e in 2030								
Provincial NPV	\$7 Million by 2030								
ADMINISTRATIVE FEASIBILITY FOR COMPLIANCE AND ENFORCEMENT	<p>The compliance and enforcement approach under the <i>Energy Efficiency Act</i> is based on random inspections and response to compliance complaints.</p> <p>Enforcement will be based on provincially and federally regulated labelling and the certified product directories of designated testers.</p> <p>Harmonization with new construction standards will be mutually beneficial as enforcement will occur at both the point of sale and at the construction site.</p>								

NOTES

REGULATORY ASSESSMENT COMPLETED BY	Cameron Shook, P.Eng Energy Efficiency Standards Engineer, Energy Efficiency Branch Tel: (778) 698-8306 E-mail: cameron.shook@gov.bc.ca
DATE	July 25, 2019

² The aggregated annual values account for the savings and GHG reductions that occur in the year specified from all units installed since the implementation of the standard up to the year specified.

Appendix C
Commercial Gas Boiler Regulatory Impact Statement
REGULATORY PROPOSAL

PREPARED BY:
ENERGY EFFICIENCY BRANCH,
B.C. MINISTRY OF ENERGY, MINES AND PETROLEUM RESOURCES
JULY 2019

COMMENTS MUST BE RECEIVED BY [OCTOBER 4], 2019

Contents:

<i>Scope and Requirements.....</i>	<i>2</i>
<i>Assessment from an Industry Perspective</i>	<i>3</i>
<i>Assessment from a Consumer Perspective</i>	<i>4</i>
<i>Assessment from a Provincial Perspective</i>	<i>6</i>
<i>Notes</i>	<i>7</i>

SCOPE AND REQUIREMENTS

TYPE OF DEVICE	<p>Commercial Gas Hot Water Boiler means a boiler that uses propane or natural gas, is intended for application in a hot water, building space heating and/or potable service water application, and has an input rate of 88 kW (300,000 Btu/h) or greater, but not more than 2,930 kW (10,000,000 Btu/hr).</p> <p>A small commercial gas hot water boiler has an input rate of 88 kW (300,000 Btu/h) or greater, but not more than 730 kW (2,500,000 Btu/hr).</p> <p>A large commercial gas hot water boiler has an input rate of 730 kW (2,500,000 Btu/h) or greater, but not more than 2,930 kW (10,000,000 Btu/hr).</p>
TEST STANDARD	ANSI/AHRI Standard 1500-2015 Standard for Performance Rating of Commercial Space Heating Boilers'
PROPOSED ENERGY PERFORMANCE STANDARD	<p>Small commercial gas hot water boilers must have a thermal efficiency (E_T) equal to or greater than 90%.</p> <p>Large commercial gas hot water boilers must have a combustion efficiency (E_c) equal to or greater than 90%.</p>
EFFECTIVE DATE	Products manufactured and sold after January 1, 2022.
CERTIFICATION	Compliance with the proposed regulation will be based on testing and verification of manufactured products to the proposed energy performance standard using the proposed test standard. Testing must be done by a Standards Council of Canada-accredited Certification Organization. Products must be labelled with an energy efficiency verification mark showing the trademark or logo of the certification body.
CURRENT STANDARD	The B.C. Energy Efficiency Standards Regulation requires commercial boilers to have a combustion efficiency equal to or greater than 80%. Products may be tested with the ANSI Z21.13-2004/CSA 4.9-2004 or the GAMA BTS-2000 test procedure. Compliant products must have an energy efficiency verification label from a Standards Council of Canada accredited Certification Organization.
HARMONIZATION	The proposed standard harmonizes with recent amendments to the federal Energy Efficiency Regulations requiring that commercial gas boilers manufactured on or after January 1, 2025 must be AFUE \geq 90%. This standard applies to all boilers shipped into B.C., but not to boilers manufactured and then purchased within the province.
NEED FOR REGULATION	<p>This standard will:</p> <ul style="list-style-type: none"> • Create a harmonized and enforceable standard for boilers manufactured in B.C. and shipped into B.C.; • Reduce net heating costs for B.C. residents and commercial building owners; and • Achieve CleanBC commitments to reduce greenhouse gas (GHG) emissions through new energy efficiency standards for space heaters, water heaters and residential windows (2.2 Improving Where We Live and Work).

TRANSPARENT REGULATION DEVELOPMENT	<p>Development of the proposed commercial gas boiler standard proceeded as follows:</p> <ul style="list-style-type: none"> • Review of provincial climate and energy plans; • Market, economic and technical analysis; and • Development of a regulatory proposal. <p>Public review and stakeholder consultation will be open for [45-days] after the publication of this document. Stakeholder consultation will be followed by regulatory drafting and submission of the regulatory proposal to Cabinet for approval.</p>
ACCEPTANCE	<p>The proposed performance level requires condensing technology and typically incorporates modulating technology and a mechanical draft. While this technology is widely available and well known to most installers, it is a change from single stage, non-condensing natural draft boilers. The two technologies have different venting requirements, physical footprints, control integration, maintenance requirements, materials of construction and operating schemes.</p> <p>Market acceptance is high as reflected by national shipping data that indicates 60% of commercial gas hot water boiler shipments from 2015-2017 were condensing.</p>
MARKET TRANSFORMATION	<p>Market transformation programs for commercial gas boilers have been operating in BC since 2016.</p> <p>FortisBC provides two tiers of incentives for commercial boilers: a lower incentive for non-condensing boilers and a higher incentive for condensing boilers that meet the proposed standard. The FortisBC program provided 240 incentives in 2016 (approximately 30% of provincial annual boiler shipments). The majority of retrofit and new construction incentives were for condensing boilers that are compliant to the proposed standard.</p> <p>The ENERGY STAR program (in Canada and the US) for commercial boilers was introduced in 2016. The ENERGY STAR program promotes boilers with thermal efficiency $\geq 94\%$ and a turndown ratio $\geq 5:1$ (a more stringent criterion than the proposed standard).</p>
AVAILABILITY	<p>Boiler shipments in Canada are used as a proxy for market availability in B.C. As noted above, from 2015 to 2017, 60% of commercial gas hot water boiler shipments in Canada met the proposed standard.</p>

ASSESSMENT FROM AN INDUSTRY PERSPECTIVE

ACCESSIBILITY	<p>Compliant small commercial gas hot water boilers are available from approximately 86% of manufacturers serving the Canadian market. There are 220 compliant models out of 454 models currently available in B.C.</p> <p>Compliant large commercial gas hot water boilers are available from 74% of manufacturers serving the Canadian market. There are 71 compliant models out of 174 models currently available in B.C.</p>
MANUFACTURER	<p>There are four commercial gas boiler manufacturers with operations in B.C. All four</p>

PERSPECTIVE	companies sell products provincially and nationally. Three of the manufactures sell products compliant to the proposed standard. One manufacturer sells only products that are not compliant with the proposed regulation. Manufacturers can continue to produce non-compliant boilers for export, but will have to design and certify a new product line to continue selling in B.C.
IMPACT ON BUILDERS	Some engineering consultants, builders and installers may not be familiar with condensing boilers and will need to learn new practices for optimal installation and operation of condensing boilers. These groups may need additional engineering time or manufacturer support on their first condensing boiler installation.
OTHER ISSUES	The advanced technology and the higher initial cost of condensing boilers will result in higher expectations of contractor professionalism and service quality.

ASSESSMENT FROM A CONSUMER PERSPECTIVE

COST-BENEFIT ASSUMPTIONS	<p>A cost-benefit analysis was completed for representative commercial buildings (a school, office building, and hospital) in the lower mainland. The cost-benefit analysis weighs the incremental purchase and maintenance costs against the energy cost savings discounted over the equipment lifetime. Net Present Value (NPV) is used to represent the economic impact of the proposed standard on each consumer. Colder climates in B.C. will have better results due to higher energy consumption and savings.</p> <p>Cost-benefit assumptions include:</p> <ul style="list-style-type: none"> • A natural gas cost for small and large commercial buildings in the lower mainland that includes delivery charges, commodity charges, carbon tax, sales tax and the clean energy levy. • A consumer discount rate of 6%. • Incremental installation costs derived for 400,000 Btu/hr, 800,000 Btu/hr and 3,000,000 Btu/hr boiler sizes from the US Department of Energy (DOE) 2016 Final Rule¹ and converted for inflation and currency. • A product lifetime of 26.9 years (derived from the US DOE 2016 Final Rule). • Building energy loads modelled for space heating demand intensities from historical commercial building energy studies,² climate conditions in the Lower Mainland and typical boiler sizing criteria. • Energy savings were modelled using the rated thermal or combustion efficiency, adjusted to account for differences in modulating vs single stage performance as well as average return water temperature profiles for B.C. climatic conditions. Data and methodology from the US DOE Final Rule 2016 were used for the adjustment factors.
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¹ EERE-2013-BT-STD-0030 Energy Conservation Program: Energy Conservation Standards for Commercial Packaged Boilers; Final Rule

**COST-BENEFIT
ANALYSIS**

**ENERGY SAVINGS
FOR EACH
CONSUMER**

The following tables show the cost-benefit analysis for the purchase of a boiler compliant to the proposed standard versus the lowest efficiency benchmark (thermal efficiency of 82%). The lowest efficient benchmark is the average thermal efficiency of products with performance near the Provincial minimum energy performance standard (combustion efficiency $\geq 80\%$).

Cost-Benefit Analysis for a 400,000 Btu/hr boiler	
Incremental installed cost	\$10,000
Annual gas savings	110 GJ
Annual GHG Reductions	5 tonnes CO ₂ e
Simple payback per unit	10 years
NPV	\$3,000

Cost-Benefit Analysis for an 800,000 Btu/hr boiler	
Incremental installed cost	\$14,000
Annual gas savings	220 GJ
Annual GHG Reductions	11 tonnes CO ₂ e
Simple payback per unit	7 years
NPV	\$14,000

Cost-Benefit Analysis for a 3,000,000 Btu/hr boiler	
Incremental installed cost	\$73,000
Annual gas savings	850 GJ
Annual GHG Reductions	42 tonnes CO ₂ e
Simple payback per unit	9 years
NPV	\$36,000

² The thermal energy demand intensity was estimated for archetype buildings using data from BC Hydro Commercial Building Energy Modelling Studies completed between 1999 and 2014.

NON-ENERGY IMPACTS	The proposed standard will reduce GHG emissions associated with commercial space heating, helping consumers reduce their environmental footprint.
	Condensing boilers also reduce air pollution associated with the combustion of fossil fuels and minimize the risk of indoor combustion spillage. Condensing boilers that use modulating technology improve comfort by creating more consistent indoor temperatures.

ASSESSMENT FROM A PROVINCIAL PERSPECTIVE

ECONOMIC ASSESSMENT FROM A PROVINCIAL PERSPECTIVE <i>(Aggregate energy, emission, and net cost savings)</i>	<p>A cost-benefit analysis was completed to assess the impact of the proposed standard on the Province. The cost-benefit analysis is represented by the net present value of boiler installations that are affected by the proposed standard between 2022 and 2030. The Provincial cost-benefit assumptions include:</p> <ul style="list-style-type: none"> • All assumptions made in the consumer cost-benefit analysis. • Energy savings were modelled using the rated thermal or combustion efficiency, adjusted to account for differences in modulating vs single stage performance as well as average return water temperature profiles for B.C. climatic conditions. Data and methodology from the US DOE Final Rule 2016 were used for the adjustment factors. <p>The Province-wide cost-benefits results are shown below.</p> <table border="1" data-bbox="435 1123 1458 1367"> <thead> <tr> <th colspan="2">Provincial Cost-Benefit Analysis³</th></tr> </thead> <tbody> <tr> <td>Aggregated Annual Gas Savings</td><td>730 TJ in 2030</td></tr> <tr> <td>Aggregated Annual GHG Reductions</td><td>36,500 tonnes CO₂e in 2030</td></tr> <tr> <td>Provincial NPV</td><td>\$20 Million by 2030</td></tr> </tbody> </table>	Provincial Cost-Benefit Analysis ³		Aggregated Annual Gas Savings	730 TJ in 2030	Aggregated Annual GHG Reductions	36,500 tonnes CO ₂ e in 2030	Provincial NPV	\$20 Million by 2030
Provincial Cost-Benefit Analysis ³									
Aggregated Annual Gas Savings	730 TJ in 2030								
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Provincial NPV	\$20 Million by 2030								
ADMINISTRATIVE FEASIBILITY FOR COMPLIANCE AND ENFORCEMENT	<p>Compliance and enforcement approach under the <i>Energy Efficiency Act</i> is based on random inspections and response to compliance complaints.</p> <p>Enforcement will be based on provincially and federally regulated labelling and the certified product directories of designated testers.</p>								

³ The aggregated annual values accounts for the savings / reductions that occur in 2030 from all units installed since the implementation of the standard up to the year specified.

NOTES

REGULATORY ASSESSMENT COMPLETED BY	Cameron Shook, P.Eng Energy Efficiency Standards Engineer, Energy Efficiency Branch Tel: (778) 698-8306 E-mail: cameron.shook@gov.bc.ca
DATE	July 25, 2019

Appendix D
Computers and Monitors Regulatory Impact Statement
REGULATORY PROPOSAL

PREPARED BY:
ENERGY EFFICIENCY BRANCH,
B.C. MINISTRY OF ENERGY, MINES AND PETROLEUM RESOURCES
JULY 2019

COMMENTS MUST BE RECEIVED BY [OCTOBER 4], 2019

Contents:

<i>Scope and Requirements.....</i>	<i>2</i>
<i>Assessment from an Industry Perspective</i>	<i>5</i>
<i>Assessment from a Consumer Perspective</i>	<i>5</i>
<i>Assessment from a Provincial Government Perspective</i>	<i>6</i>
<i>Notes</i>	<i>7</i>

SCOPE AND REQUIREMENTS

TYPE OF DEVICE	<p>“Computer” means a device that performs logical operations and processes data. A computer includes both stationary and portable units and includes a desktop computer, a portable all-in-one, a notebook computer, a mobile gaming system, a high expandability computer, a small-scale server, a thin client, and a workstation. Although a computer is capable of using input devices and displays, such devices are not required to be included with the computer when the computer is shipped. A computer is composed of, at a minimum:</p> <ul style="list-style-type: none"> (1) A central processing unit (CPU) to perform operations or, if no CPU is present, then the device must function as a client gateway to a server and the server acts as a computational CPU; (2) Ability to support user input devices such as a keyboard, mouse, or touchpad; and (3) An integrated display screen or the ability to support an external display screen to output information. <p>The term “computer” does not include a tablet, a game console, a television, a small computer device, a server other than a small-scale server, or an industrial computer.</p> <p>“Computer monitor” means an analog or digital device of diagonal screen size greater than or equal to 17 inches and less than or equal to 61 inches, that has a pixel density of greater than 5,000 pixels per square inch, and that is designed primarily for the display of computer generated signals for viewing by one person in a desk-based environment. A computer monitor is composed of a display screen and associated electronics.</p> <p>A computer monitor does not include:</p> <ul style="list-style-type: none"> (1) Displays with integrated or replaceable batteries designed to support primary operation without AC mains or external DC power (e.g., electronic readers, mobile phones, tablets, battery-powered digital picture frames); or (2) A television or a signage display.
TEST STANDARD	<p>Computers: ENERGY STAR Program Requirements for Computers, Final Test Method Rev. March-2016 with the additional requirements described in California’s Title 20 § 1604. Test Methods for Specific Appliances (v) (4).</p> <p>Computer monitors: ENERGY STAR Program Requirements for Displays, Final Test Method Rev. Sep-2015 with the additional requirements described in California’s Title 20 § 1604. Test Methods for Specific Appliances (v) (5).</p>

**PROPOSED ENERGY
PERFORMANCE
STANDARD**

Computers: The proposed energy performance standards for desktop computers, thin clients, mobile gaming systems, portable all-in-ones, notebook computers, small-scale servers and workstations is equivalent to the requirements set forth in California's Title 20 § 1605.3. (v) (4), (5) and (6):

Computer Type	Tier 1	Tier 2
Desktop Computers, mobile gaming systems, and thin clients with an $ES \leq 250$	50 kWh/yr + applicable adders	50 kWh/yr + applicable adders
Desktop Computers, mobile gaming systems, and thin clients with an $250 < ES \leq 425$	80 kWh/yr + applicable adders	60 kWh/yr + applicable adders
Desktop Computers, mobile gaming systems, and thin clients with an $425 < ES \leq 690$	100 kWh/yr + applicable adders	75 kWh/yr + applicable adders
Notebook computers and portable all-in-ones	30 kWh/yr + applicable adders	30 kWh/yr + applicable adders

The performance metric consists of a basic consumption allowance and applicable adders. Adders are additional consumption allowances (kWh/yr) for product features. The maximum consumption (kWh/yr) of a computer with many features will be higher (due to the inclusion of applicable adders) than a computer will only a few features. Applicable adders will be further defined in the regulation and will be equivalent to the adders set forth in California's Title 20 § 1605.3. (v) (5).

Computer Monitors: The proposed computer monitor standard requires that on-mode power draw shall be less than or equal to the following equation with each of the applicable allowances applied at most once. Applicable allowances will be further defined in the regulation and will be equivalent to the allowances set forth in California's Title 20 § 1605.3. (v) (4).

$$E_{on} < (E_{on_max} + E_{EP} + E_{Game} + E_{OLED} + E_{Curve})$$

Where:

- E_{on} is the computer monitor on-mode power draw in watts;
- E_{on_max} is the maximum on-mode power draw in watts;
- E_{EP} is the enhanced performance display allowance in watts;
- E_{Game} is the gaming monitor allowance in watts;
- E_{OLED} is the OLED monitor allowance in watts; and
- E_{Curve} is the curved monitor allowance in watts.

EFFECTIVE DATE	<p>Regulated computers and monitors manufactured and sold after July 1, 2020.</p> <p>Regulated computers manufactured between July 1, 2020 and January 1, 2021 must comply with the Tier 1 performance standard. Regulated computers manufactured after January 1, 2021 must comply with the Tier 2 performance standard.</p>
CERTIFICATION	<p>Compliance with the proposed standard will be based on testing and verification by a certification body accredited by an International Accreditation Forum Multilateral Recognition Arrangement signatory to ISO/IEC 17065 which maintains an internet accessible product listing. No unique B.C. labeling will be required.</p>
CURRENT STANDARD	<p>The B.C. Energy Efficiency Standards Regulation currently does not have any requirements for computers or computer monitors.</p>
HARMONIZATION	<p>These proposed standards are harmonized with state regulations in California, Vermont, and recently passed legislation in Washington State. The standards became effective in California on January 1, 2019 ,and will become effective on January 1, 2020 and January 1, 2021 in Vermont and Washington, respectively.</p>
NEED FOR REGULATION	<p>Household electricity uses from personal electronics, including computers, has increased from 7 to 17 percent since the early 1990s in B.C. The trend of an increasing number of personal electronic devices and an increase in their use is expected to continue.</p> <p>Energy efficiency standards support B.C.'s energy objective in the <i>Clean Energy Act</i> to take demand-side measures and to conserve energy. The proposed standards reduce electricity costs for consumers and businesses. The standards will provide a positive economic return across most regulated products.</p>
TRANSPARENT REGULATION DEVELOPMENT	<p>Development of the proposed computers and monitors standard proceeded as follows:</p> <ul style="list-style-type: none"> • Review of provincial climate and energy plans; • Market, economic and technical analysis; and • Development of a regulatory proposal. <p>Public review and stakeholder consultation will be open for [45 days] after the publication of this document. Stakeholder consultation will be followed by regulatory drafting and submission of the regulatory proposal to Cabinet for approval.</p>
ACCEPTANCE	<p>The proposed standard will not create a significant change in the performance, interface or use of regulated products.</p> <p>Compliant products differ from non-compliant products by the addition of higher efficiency hardware components and by enhanced software. High-efficiency components are available at equivalent computer performance to incumbent technology. A large area of improvement is the computer's power consumption while idle, which has a negligible effect on product use.</p> <p>The performance metric for computers provides flexibility for more powerful computers to meet the standard. The performance metric for monitors accounts for screen size and resolution in order to provide flexibility for various product types to meet the standard.</p>

MARKET TRANSFORMATION	Energy efficient computers and monitors have been promoted by the ENERGY STAR program since 1992. Hardware components and software enhancements developed to meet version 6 and 7 of the ENERGY STAR criteria (developed in 2014 and 2018) can be combined to meet the proposed standard.
AVAILABILITY	Computer and monitor manufacturers have developed a full spectrum of products to serve the California market. As of April 2019, the California Energy Commission's certified product directory showed 4,000 certified product families representing 45 manufacturing companies. The six major brands that represent 80% of the international market are all represented. B.C. is expected to have comparable product availability as California.

ASSESSMENT FROM AN INDUSTRY PERSPECTIVE

MANUFACTURER PERSPECTIVE	Computer manufacturers design products for global markets and seek to minimize differences in standards and classifications across different jurisdictions. The proposed B.C. standards are harmonized with California and Washington state, representing major west coast consumer markets.
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ASSESSMENT FROM A CONSUMER PERSPECTIVE

COST-BENEFIT ASSUMPTIONS	<p>A cost-benefit analysis was completed for products sold in B.C. Net Present Value (NPV) is used to represent the economic impact of the proposed standard on each product and weighs the benefits of the energy savings against the increased upfront cost over the life of the product.</p> <p>Cost-benefit assumptions include:</p> <ul style="list-style-type: none"> Weighted average BC Hydro electrical rates for residential and commercial buildings with forecasted rate increased between 2020 and 2040. Electrical rates include all applicable taxes and the rate rider. Incremental capital costs, energy consumption and product lifetime estimates derived from the California Energy Commission (CEC) Staff Report <i>Final analysis of Computers, Computer Monitors, and Signage Displays</i>. A consumer discount rate of 6%. <p>Estimated incremental purchase costs for various product types are shown in the table below:</p> <table border="1"> <thead> <tr> <th colspan="2">Incremental Costs</th></tr> </thead> <tbody> <tr> <td rowspan="2">Desktops</td><td>Tier 1 - \$12.13</td></tr> <tr> <td>Tier 2 - \$17.78</td></tr> </tbody> </table>	Incremental Costs		Desktops	Tier 1 - \$12.13	Tier 2 - \$17.78
Incremental Costs						
Desktops	Tier 1 - \$12.13					
	Tier 2 - \$17.78					

	Notebook	\$1.27
	Small-scale Server	\$16.51
	Workstation	\$16.51
	Monitors	\$6.35
COST-BENEFIT ANALYSIS ENERGY SAVINGS FOR EACH CONSUMER	The NPV for various product types is shown below. A positive NPV shows a net benefit to the consumer.	
	NPV per product	
	Desktops	Tier 1 \$2.76
		Tier 2 \$12.89
	Notebook	\$0.17
	Small-scale Server	-\$4.75
	Workstation	\$1.81
	Monitors	\$6.32

ASSESSMENT FROM A PROVINCIAL GOVERNMENT PERSPECTIVE

ECONOMIC ASSESSMENT FROM A PROVINCIAL PERSPECTIVE <i>(Aggregate energy, emission and net cost savings)</i>	A cost benefit analysis was completed to assess the impact of the proposed standard on computer and monitor sales in the Province between 2020 and 2030. The Provincial cost benefit assumptions include:						
	<ul style="list-style-type: none">• All assumptions made in the consumer cost-benefit analysis.• A forecast of future shipments based on product replacement rates from the CEC staff report, provincial housing starts and historical stock of computing appliances per residential and commercial electricity account.						
	The Province-wide cost-benefits results are shown below:						
	<table><tr><th colspan="2">Provincial Cost-Benefit Analysis</th></tr><tr><td>Aggregated Annual Electrical Savings¹</td><td>150 GWh in 2030</td></tr><tr><td>Provincial NPV</td><td>\$60 Million by 2030</td></tr></table>		Provincial Cost-Benefit Analysis		Aggregated Annual Electrical Savings ¹	150 GWh in 2030	Provincial NPV
Provincial Cost-Benefit Analysis							
Aggregated Annual Electrical Savings ¹	150 GWh in 2030						
Provincial NPV	\$60 Million by 2030						

¹ The aggregated annual energy savings accounts for the energy savings that occur from all units installed since the implementation of the standard up to the year specified.

**ADMINISTRATIVE
FEASIBILITY FOR
COMPLIANCE
AND
ENFORCEMENT**

The compliance and enforcement approach under the *Energy Efficiency Act* is based on random inspections and response to compliance complaints. The certification body's internet accessible product listing will be used to determine product compliance.

NOTES
**REGULATORY
ASSESSMENT
COMPLETED BY**

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DATE

July 25, 2019

Appendix E
General Service LED and Small Diameter Directional Lamps
REGULATORY PROPOSAL

PREPARED BY:
ENERGY EFFICIENCY BRANCH,
B.C. MINISTRY OF ENERGY, MINES AND PETROLEUM RESOURCES
JULY 2019

COMMENTS MUST BE RECEIVED BY [OCTOBER 4], 2019

Contents:

<i>Proposed Changes to the General Service LED Lamp Standard</i>	<i>2</i>
<i>Proposed Changes to the Small Diameter Directional Lamp Standard</i>	<i>3</i>
<i>Notes</i>	<i>4</i>

PROPOSED CHANGES TO THE GENERAL SERVICE LED LAMP STANDARD

TYPE OF DEVICE	<p>“General Service LED lamp” means a lamp that provides functional illumination, is screw based and has:</p> <ul style="list-style-type: none"> a. a luminous flux of at least 310 lm but not more than 2,600 lm; b. a nominal voltage of at least 110 volts but not more than 130 volts, or a nominal voltage range that lies at least partially between those voltages; and c. a light source that comes from light-emitting diodes (LED); <p>but does not include a lamp described in any of paragraphs (a), (c) to (h), (k) to (o) or (q) of the definition of “general service lamp” in Section 433 (1) of the federal Energy Efficiency Regulations.</p>
ENERGY PERFORMANCE STANDARD (PROPOSED CHANGE)	The proposed change will exempt General Service LED lamps from the requirements of an energy performance standard.
TEST STANDARD (PROPOSED CHANGE)	The proposed change will exempt General Service LED lamps from testing requirements.
CERTIFICATION (PROPOSED CHANGE)	The proposed change will exempt General Service LED lamps from verification requirements.
LABELLING (PROPOSED CHANGE)	The proposed change will exempt General Service LED lamps from labelling requirements.
EFFECTIVE DATE	The proposed effective date is January 1, 2020.
HARMONIZATION	The proposed updates are harmonized with Provincial regulations in Ontario and Quebec.
NEED FOR REGULATION	The Ministry of Energy, Mines and Petroleum Resources (Ministry) periodically reviews existing standards and proposes changes to reduce regulatory burden where possible. The proposed change will reduce regulatory burden.
TRANSPARENT REGULATION DEVELOPMENT	<p>Development of the proposed General Service LED update proceeded as follows:</p> <ul style="list-style-type: none"> • Review of provincial climate and energy plans; • Market, economic and technical analysis; and • Development of a regulatory proposal. <p>Public review and stakeholder consultation will be open for [45 days] after the publication of this document. Stakeholder consultation will be followed by regulatory drafting and submission of the regulatory proposal to Cabinet for approval.</p>

ACCEPTANCE	LED technology has improved such that high cost, poor colour rendering index, rated life and incompatibility with dimmers are no longer major concerns. The proposed change is not expected to impact market acceptance of general service LED lamps.
MARKET TRANSFORMATION	BC Hydro has provided consumer rebates for General Service LED lamps at retailers twice a year since the early 2000's, discounting retail prices by approximately 25%.
AVAILABILITY	General Service LED lamps are widely available. As of 2016, LEDs and CFLs accounted for over two thirds of shelf-space dedicated to general service lamps in B.C.
IMPACT ON THE PROVINCE	Most General Service LED lamps meet regulated energy performance requirements in B.C. Exemption of the energy performance standard is not expected to impact the Province's energy conservation targets.
IMPACT ON CONSUMERS	The proposed change will further increase availability of General Service LED products in B.C.
IMPACT ON MANUFACTURERS AND RETAILERS	The proposed changes will reduce the certification burden on General Service Lamp manufacturers and distributors.

PROPOSED CHANGES TO THE SMALL DIAMETER DIRECTIONAL LAMP STANDARD

TYPE OF DEVICE (PROPOSED CHANGE)	<p>The proposed change will exclude LED lamps from the Small Diameter Directional Lamp definition. Excluded lamps will not need to meet regulatory requirements for energy performance, testing or certification. The proposed update to the definition is as follows:</p> <p>"Small Diameter Directional Lamp" means a lamp that is non-tubular and has:</p> <ol style="list-style-type: none"> a diameter of not more than 57 mm; at least 80% of light output within a solid angle of π steradians; a base type of E26, G4, GU5.3, GU10 or GX5.3; a luminous flux of more than 150 lm; and is designed to operate at voltages between 11 to 13 volts and 110 to 130 volts; <p>but does not include:</p> <ol style="list-style-type: none"> a multifaceted reflector shape lamp that has a first number symbol equal to 16; a nominal input voltage of 12 volts; and a luminous flux of 800 lm or more; a reflector lamp that has a first number symbol less than 16, and does not have a screw base type of E26/E24, E26d, E26/50x39, E26/53x39, E29/28, E29/53x39, E39, E39d, EP39 or EX39; a multifaceted reflector shape lamp that is designed and marketed for a specialty application that has a rated life of not more than 300 hours; and lamps that use light emitting diode technology.
EFFECTIVE DATE	The effective date is January 1, 2020.

HARMONIZATION	The proposed change to the standard aligns with US Department of Energy (DOE) lighting standards.
NEED FOR REGULATION	The Ministry periodically reviews existing standards and proposes changes to reduce regulatory burden where possible. The proposed change will reduce regulatory burden.
TRANSPARENT REGULATION DEVELOPMENT	<p>Development of the Small Diameter Directional lamp proposal proceeded as follows:</p> <ul style="list-style-type: none"> • Review of provincial climate and energy policies; • Market, economic and technical analysis; and • Development of a regulatory proposal. <p>Public review and stakeholder consultation will be open for [45 days] after the publication of this document. Stakeholder consultation will be followed by regulatory drafting and submission of the regulatory proposal to Cabinet for approval.</p>
ACCEPTANCE	LED technology has improved such that high cost, poor colour rendering index, rated life and incompatibility with dimmers are no longer major concerns. The proposed change is not expected to impact market acceptance of general service LED lamps.
MARKET TRANSFORMATION	Market transformation for Small Diameter Directional LED lamps has occurred in the absence of specific demand-side management programs.
AVAILABILITY	The proposed change will ensure wide availability of Small Diameter Directional LED lamps in B.C.
IMPACT ON THE PROVINCE	The proposed change will not impact forecast energy savings for the standard.
IMPACT ON CONSUMERS	The proposed change will increase availability of Small Diameter Directional LED lamps in B.C.
IMPACT ON MANUFACTURERS AND RETAILERS	The proposed change will minimize regulatory burden for Small Diameter Directional LED lamp manufacturers.

NOTES

CONTACT	<p>Cameron Shook, P.Eng Energy Efficiency Standards Engineer, Energy Efficiency Branch Tel: (778) 698-8306 E-mail: cameron.shook@gov.bc.ca</p>
DATE	July 25, 2019